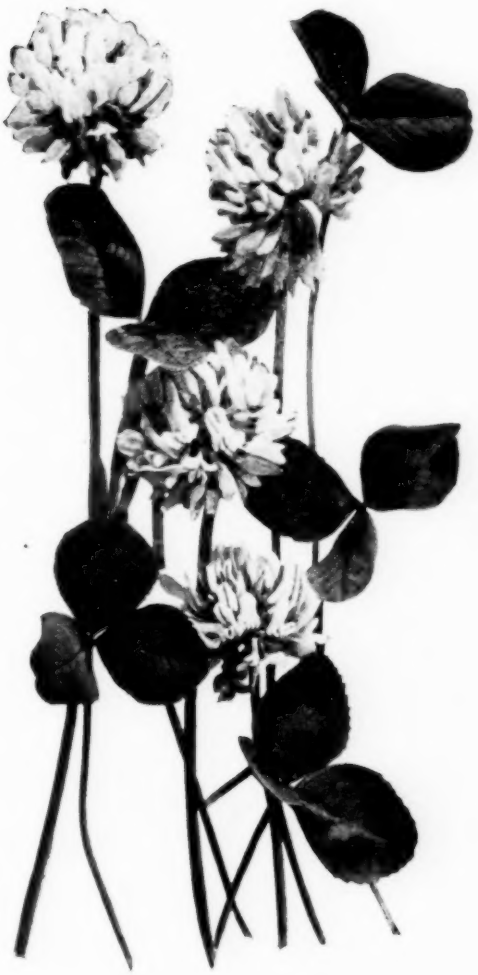
Gleanings in Bee Culture



"The Clover's in the Bloom."

VOLUME L JUNE, 1922 NUMBER 6

$1 Order Your Queens Now $1

QUEENS OF SUPREME QUALITY.

Just think of it. Only $1 for one of my bright three-banded northern-bred Italian queens, after 10 years of select breeding. I have produced a strain of bees that get the honey and stand the northern winters. Last year every order was filled by return mail. Expect to do the same this year. This is the kind of letters I receive daily:

"Dear Mr. Major: How early in spring could you fill an order for one dozen Italian queens? My experience and observation with your strain of Italians have shown them to be extremely gentle, good honey gatherers and unexcelled in the beautifully white and even capping of the honey. Yours very truly,

"Orel L. Hershiser."

Mr. Hershiser is one of our state inspectors and has been a buckeye almost all his life; also inventor of the Hershiser wax press. Does he know good bees when he sees them? I use a duck system. I guarantee pure mating, safe arrival, free from disease and health certificate furnished with each shipment.

Select Untested, from 1 to 100, $1.00 each.
Select Tested, $1.50 each.
Extra Select Breeders, $5.00 each.

All ready to queen; mailing cages mixed to government regulations; all orders greatly appreciated and acknowledged the same day received.

H. N. MAJOR, SOUTH WALES, N. Y.

"Griggs Saves You Freight"

TOLEDO

Is the Dependable Place
to get Quick Service on

BEE SUPPLIES

And the Quality We Handle
Is Always the Best.

SPECIAL DISCOUNT

On Large Orders. Send
List of Goods Wanted.

BEESWAX AND HONEY

Taken in Exchange
for Supplies.

Free Catalog.

Griggs Bros. Co.

TOLEDO, OHIO.

"Griggs Saves You Freight"

1922 **Bees and Queens of Quality** *1922*

Get your orders in early.

3000 Nuclei headed with young Italian Queens ready to serve you on early spring orders.

April, May and June

Untested Queens	$1.50;	25 to 99,	$1.30
Sel. Untested Queens	1.75;	25 to 99,	1.50
Tested Queens	2.25;	25 to 99,	2.00
Select Tested Queens	2.75;	25 to 99,	2.25

July to November

Untested Queens	$1.25;	25 to 99,	$1.00
Sel. Untested Queens	1.50;	25 to 99,	1.25
Tested Queens	2.00;	25 to 99,	1.50
Select Tested Queens	2.25;	25 to 99,	2.00

Write for prices on 100 or over.

1-1 frame Nucleus with Tested Breed-ing Queen $10.00

1-pound Package Italian Bees	$2.25
2-pound Package Italian Bees	3.75
3-pound Package Italian Bees	5.25

Quantity prices on application.

Safe arrival and satisfaction guaranteed to any point in the United States.

THE A. I. ROOT CO. OF TEXAS

BOX 765, SAN ANTONIO, TEXAS.

CONTENTS

JUNE, 1922

Honey Markets		352-353
Editorials		365-367
Choosing a Location	M. C. Richter	368-371
The Cause of Swarming	Geo. S. Demuth	371-373
Surprises in Extracting	H. H. Root	374-375
Fifty Years' Experience	J. E. Crane	375-376
Absolute Swarm Prevention	E. F. Atwater	377
Cataleptic Queens	Jay Smith	377-378
Swarm Control	M. A. Gill	378-379
Comb Lovers and Fire Worshippers	H. L. McMurry	379-380
Siftings	J. E. Crane	381
In a Rented Kitchen	Constance Root Boyden	382-383
Beekeeping as a Side Line	Grace Allen	384-385
From North, East, West and South		386-389
Heads of Grain from Different Fields		390-392
Bees, Men and Things		393
Gleaned by Asking	Geo. S. Demuth	394-395
Just News		396
Talks to Beginners	Geo. S. Demuth	397-399
Our Homes	A. I. Root	400-403

SUBSCRIPTION RATES.—One year, $1.00. (Low paid-in-advance subscription rates withdrawn.) Single copy, 10 cents. Canadian subscription, 15 cents additional per year, and foreign subscription, 30 cents additional. **DISCONTINUANCE.**—Subscriptions, not paid in advance, or specifically ordered by the subscriber to be continued, will be stopped on expiration. No subscriber will be run into debt by us for this journal. **CHANGE OF ADDRESS.**—Give your old address as well as the new and write the name to which the journal has heretofore been addressed. **REMITTANCE.**—Should be sent by postoffice money order, bank draft, express money order, or check. **CONTRIBUTIONS** to GLEANINGS columns solicited; stamps should be enclosed to insure return to author of manuscript if not printed. **ADVERTISING RATES.**—Advertising rates and conditions will be sent on request. Results from advertising in this journal are remarkably satisfactory. **ADVERTISERS' LIABILITY.**—The publishers use utmost diligence to establish in advance the relinbility of every advertiser using space in this journal.
Entered as second class mail matter at the Postoffice at Medina, Ohio. Published monthly. Percentage of reading matter in this issue, 58.5 per cent; advertising, 41.5 per cent.

THE A. I. ROOT COMPANY, Publishers, Medina, Ohio

Editorial Staff

Geo. S. Demuth and E. R. Root	A. I. Root	H. H. Root	H. G. Rowe
Editors	Editor Home Dept.	Assistant Editor	M'n'g Editor

Money Saved
Time Saved

Bee Supplies

Root's Goods at factory prices with WEBER'S service. Send us a list of your wants and we will quote you prices that will save you money.

C. H. W. Weber & Co.

2163-65-67 Central Ave.
Cincinnati, Ohio

MR. BEEKEEPER ----

We have a large plant especially equipped to manufacture the supplies that you use. We guarantee all materials and workmanship. We ship anywhere. We allow early order discounts and make prompt shipments. *We pay the highest cash and trade prices for beeswax.*

Write for free illustrated catalog today.

LEAHY MFG. CO., 95 Sixth Street, Higginsville, Missouri

Texas Beekeepers should write to A. M. Hunt, Goldthwaite, Texas.

SUPERIOR FOUNDATION

"BEST BY TEST"

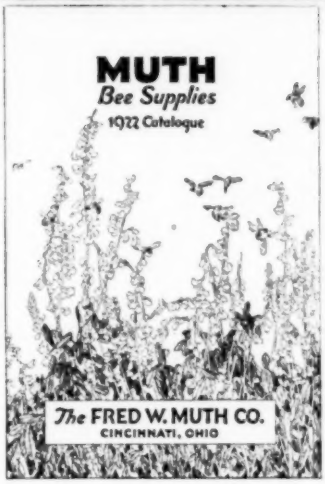
Do not fail to secure our 1922 reduced prices on SUPERIOR FOUNDATION. State quantity desired.

We also manufacture Hoffman frames, dovetailed beehives, etc. Quality unexcelled; prices on request.

SUPERIOR HONEY COMPANY, OGDEN, UTAH

(Manufacturers of Weed Process Foundation.)

A MESSAGE FOR YOU



You need our new 1922 bee supply catalog more than ever before. Have you received one? Many new articles are listed for the saving of labor and greater honey production. Our attractive prices, superior quality and prompt service will always be appreciated by beekeepers.

Send a list of your requirements to us.

THE FRED W. MUTH COMPANY,
Pearl and Walnut Streets,
Cincinnati, Ohio.

HONEY SECTIONS

Just a reminder that our sections are made from Northern Wisconsin basswood; this makes them JUST A LITTLE BETTER. This basswood is all winter-sawed, that's why our sections are JUST A LITTLE WHITER and look JUST A LITTLE BETTER. We are working overtime to give our customers JUST A LITTLE BETTER SERVICE.

We have a full line of hives, supers, hive-bodies, frames, foundation and all other Standard Supplies that are JUST A LITTLE BETTER; get our catalog and know why.

August Lotz Co.

BOYD, WISCONSIN.

Indiana Beekeepers please note:

Service AND Indianapolis ARE Synonymous

Why send to some far-away dealer and wait for two weeks when you can send to Indianapolis and get your bee supplies in two or three days?

Have you our 1922 catalog? If not, write us for one today.

The A. I. Root Company

873 Massachusetts Ave.,
Indianapolis, Ind.

HONEY MARKETS

U. S. GOVERNMENT MARKET REPORTS.

Information from Producing Areas (First half of May).

CALIFORNIA POINTS.—Continued cool and foggy weather with occasional showers has retarded the new honey crop, until it is not expected that new stock will be on the market in appreciable quantities before the 20th or 22d of May. The market is in a waiting position, as the old crop is practically cleaned up, and no sales of new stock have been reported. Dealers report a few purchases extracted honey from growers at 6c for light amber sage, 8c for extra light amber, and 9c for white sage.

INTERMOUNTAIN REGION.—In the northern part of the area, the season is cold and wet, and two to four weeks later than usual. Many colonies are reported light in stores, and considerable feeding has been necessary this spring. One correspondent reports that even colonies which went into winter quarters with 40 lbs. of honey must be fed this spring. In spite of cool weather fruit and dandelion are in full bloom, giving impetus to brood-rearing, and prospects are good for abundant flow from alfalfa and sweet clover. Bees building up fast and increasing in strength rapidly. No carlot sales reported during past two weeks. In less-than-carlots, white sweet clover and alfalfa extracted has been selling in 60-lb. cans at a range of 8½-10c per lb., mostly 8½c for shipments of any size. Sales of No. 1 and fancy white comb reported at $4.00, and $3.00 for amber. For yellow beeswax, beekeepers are receiving 20-24c per lb. cash, or 26c in trade. In the Salt River Valley section of Arizona considerable feeding has been necessary, due to early breeding up from early pollen. Good prospects for mesquite flow.

TEXAS POINTS.—The crop is generally two to four weeks late. Too much rain thus far for much mesquite flow, but it is starting to bloom in some sections. Fine flow reported now from catsclaw. Yield from other flora expected to be good if clear sunshiny weather is present, but excessive rain will cut the early spring crop to below normal. Some beekeepers have begun to extract and comb will soon be ready to take. Good demand reported for early honey, especially for chunk honey. White extracted is nominally on a basis of 8½c per lb. in cases of two 60-lb. cans, and 14c per lb. for white chunk in the same container. Some white mild chunk honey reported selling in small containers in 60-lb. cases as follows: in 10-lb. pails, $8.40 per case; 5-lb. pails, $9.00; 3-lb. cans, $9.60 per case; in less-than-carlot quantities.

EAST CENTRAL AND NORTH CENTRAL STATES.—Largest flow in years reported from dandelion and fruit bloom, which should make up part of the present deficiency of stores in the colonies. Clover outlook also good. Demand is not active, and some extracted will be carried over. Most beekeepers, however, report supplies exhausted long ago. Packers reported offering 11c per lb. delivered for extracted white clover in large lots, but no sales reported.

PLAINS AREA.—Condition of honey plants greatly improved, due to an abundance of moistures, and beekeepers feel much encouraged. Bees building up rapidly. Many colonies reported to be filling supers, which is unusual for this time of year.

SOUTHEASTERN STATES.—Conditions differ widely in different states. In Alabama the early flow is reported as unusually good with many hives storing supplies. Clover flow commences about May 20. Few sales tupelo reported to grocers and hotels at 10c per lb. in small containers. Saw palmetto is said to be yielding a great flow of fine quality nectar in Florida, the best in years. South Georgia, however, reports a more discouraging situation. Alternating dry weather, cold spells, showers and dry winds have given the bees little opportunity to store nectar, and even if the gallberry flow lasts a week longer it is said that not over half a normal crop will be harvested in this section.

NORTHEASTERN STATES.—Recent frosts have not greatly affected the flora, and prospects for a good honey crop are excellent. Fruit bloom is stimulating breeding and colonies are building up very fast. Swarms reported early as May 2 in northeastern Pennsylvania. Abundant supply of maple syrup causing extracted honey to move slowly.

CUBA.—Shipments to Holland in barrels continue very heavy at 56c a gal., including cost and freight. Price f. o. b. Cuba 4c per lb. Beeswax offered at 21c per lb.

Telegraphic Reports from Important Markets.

BOSTON.—Limited demand for extracted and very light demand for comb. California white sage firmly held, other kinds steady. Comb: Sales to retailers, New York, 24-section cases No. 1 white clover $6.50-7.00. Extracted: Sales to confectioners and bottlers, Cuban, amber, 80-85c per gal. California, white sage 15-16c per lb. Brokers' carlot quotations, delivered Boston basis, per lb., California, white sage, none offered, light amber 8c, amber 7c.

CHICAGO.—Supplies believed only moderate. Slightly better movement, market about steady. Sales to bottlers, bakers and wholesale grocers, per lb., Nevada and Colorado, mixed alfalfa and clover white 10-11c, light amber 9-9½c, dark around 8c. California, white sage 10-11c, mixed mountain flowers light amber 9c. Wisconsin and Michigan, mixed white clover and alfalfa, and some straight clover, 11-12c, basswood mostly 12c. Comb: Demand and movement very slow, market weak. Sales to retailers, 24-section cases Colorado and Montana, mixed clover and alfalfa No. 1, $4.00-$4.50; No. 2, $3.00-3.50. Beeswax: Receipts light. Market stronger and prices may go higher. Few small sales reported to laundry supply houses, Montana and Wyoming, light 33c per lb.

PHILADELPHIA.—Supplies generally light but demand is limited. Market slightly stronger. No sales reported, but one dealer reports a purchase of Cuban amber in barrels at 63c per gal. f. o. b. Philadelphia. Beeswax: Receipts increasing. Demand moderate and improving, market stronger. Sales to manufacturers, per lb., African, dark, 20-21c. South American, light 25½-26½c.

ST. LOUIS.—Demand light, practically no movement, market very dull. Comb: Sales to wholesalers and jobbers, in 24-section cases, Colorado and Idaho, white clover and alfalfa No. 1 medium $5.50-6.00. Extracted: Sales to wholesalers and jobbers, per lb. in 5-gal. cans, California, light amber alfalfa 9-10c, mostly around 9c. Beeswax: No receipts reported during past two weeks. Market nominal, practically no change in prices. Ungraded average country run quoted to jobbers nominally 23c per lb.

NEW YORK.—Both domestic and foreign receipts light. Supplies limited. Demand moderate, market steady. Extracted: Spot sales to jobbers, wholesalers, confectioners, bakers and bottlers, domestic, per lb., California, light amber alfalfa 8-8½c, light amber sage 9-10c, white sage 11-12c, white orange blossom 12-13c. Intermountain region, white sweet clover 10½-11c. New York, white clover 10½-11½c. New York, white clover 10½-11½c, few 12c, buckwheat, mostly 7c. South American refined best 65-70c per gal. Comb: No sales reported. Beeswax: Foreign receipts limited. Demand moderate, market firm. Spot sales to wholesalers, manufacturers and drug trade, South American and West Indian, crude light best 27-30c, poorer low as 24c. African, dark 18-20c.

From Producers' Association.

Demand for comb honey in less than carlot has improved, and sales have been better than expected. A little interest is also shown in carlots and some business may result. Extracted fancy white suitable for bottlers is closely cleaned up and but very little in carlot available.

The Colorado Honey Producers' Ass'n,
Denver, Colo. F. Rauchfuss, Sec.

The A. I. Root Company's Quotation.

We are in the market for one carlot of white clover extracted honey for which we will pay 11½c cash f. o. b. Medina; one carlot of sweet clover extracted honey for which we will pay 8¼c f. o. b. shipping point; one carlot of water white button sage honey (new crop) for which we will pay 9c f. o. b. shipping point; and one carlot of light amber extracted honey for which we will

pay 6c f. o. b. shipping point. Samples to be submitted. Not in the market for comb.

(No shipments of honey will be accepted under any conditions except as ordered by our purchasing department.)

The A. I. Root Company.

The Opinions of Honey Producers Themselves as Reported to Gleanings in Bee Culture.

Early in May we sent to actual honey producers and some associations the following questions:

1. What portion of the 1921 crop, if any, is still in the hands of producers in your locality? Give answer in per cent.
2. What price are producers receiving, if still having honey for sale, at their station when sold in large lots? (a) Comb honey? (b) Extracted honey?
3. What are prices to retailers in small lots? If producers are sold out give prices received by others when selling in your market. (a) Comb honey per case, fancy or No. 1? (b) Extracted honey in 5-lb. pails or other retail packages?
4. How is honey now moving on the market in your locality? Give answer in one word, as slow, fair, rapid.
5. How does the number of colonies in your locality that are in condition to store surplus honey compare with the number last year? Give answer in per cent.
6. What is the condition of the bees at present as compared with normal? (a) As to strength of colonies? (b) As to amount of stores?
7. What is the condition of the honey plants at this time, compared with normal? Give answer in per cent.
8. How does the early honey flow, if any, in your locality compare with normal thus far? Give answer in per cent.

The answers as returned by our honey and bee reporters are as follows:

State.	Reported by:	Crop Unsold.	In large lots. Comb.	Extr.	To Retailers. Comb.	Extr.	Movement.	No. Col.	Condition. Strgth.	Stores.	Plant Cond.	Honey Flora.
Ala.	J. M. Cutts	8			$0.60		Fair	110	100	100	100	200
Ala.	J. C. Dickman	8	$5.75	$.09	$6.00	.90	Fair	125	100	100	100	100
Ark.	J. Johnson	0			6.00	.90		100	100	100	125	100
B. C.	W. J. Sheppard	0						75	75	75	100	
Cal.	L. L. Andrews			.10	7.20	.95	Fair	90	100	50	85	25
Cal.	M. H. Mendleson	0					Fair		50	10		
Cal.	M. C. Richter	10		.12		1.50	Fair	60	90	60	90	80
Cal	M. A. Saylor	1			6.00	1.00	Fair	100	95	90	100	100
Colo.	B. W. Hopper	0					Slow	100	100	100	100	200
Colo.	J. A. Green	1			4.50	.62	Slow	100	90	95	100	100
Colo	J. H. Wagner	40	3.00	.14	3.75	.90	Fair	70	75	0	80	
Conn.	A. Latham	0					Slow	125	110	85	100	100
Fla.	C. C. Cook			.10		.65	Fair	140	125	125	100	100
Fla.	H. Hewitt	0				.85	Slow	100	100	100	125	125
Fla.	W. Lamkin	0					Slow					
Ga.	J. J. Wilder	10	5.25	.06		.70	Fair	90	90	100	100	115
Ill.	C. F. Bender	0			6.00		Good	95	110	75	120	75
Ill.	A. L. Kildow	0						110	135	100	125	100
Ind.	T. C. Johnson	0			5.75	.85	Slow	100	100	100	110	100
Ind.	E. S. Miller	20			6.00	1.00	Slow	100	100	95	100	125
Ind.	J. Smith	0	6.50				Fair	75	100	50	100	150
Iowa.	E. G. Brown	8		.10	4.50	.80	Fair	90	100	80	100	100
Iowa.	F. Coverdale	0			6.00	1.00	Fair	80	100	125	100	135
Iowa	W. S. Pangburn	10		.14		.87	Slow	75	90		100	
Kan.	J. A. Nininger	0			5.00	.75	Slow	100	100	80	100	100
Ky.	P. C. Ward	1					Slow	125	120	120	100	125
La.	E. C. Davis	10		.09		.75	Fair	100	100	100	100	150
Me.	O. B. Griffin	2			7.00		Slow	100	100	85	90	
Md.	S. G. Crocker, Jr.	10			5.00	1.25	Slow	100	80	75	75	50
Mass.	O. M. Smith	0					Slow	100	100	90	100	
Mich.	I. D. Bartlett						Fair	100	110	110	125	100
Mich.	F. Markham	5		.12		.80	Slow	150	125	125	100	100
Miss.	R. B. Willson	3		.08			Slow	110	100	100	100	75
Mo.	J. F. Fisbeck						Slow	100			110	
Mo.	J. W. Romberger	0			6.25	.90	Fair	100	100		90	100
Mont.	R. A. Bray	10	4.50	.11	5.00	.65	Fair	90	90	85	90	90
Nev.	E. G. Norton	5	5.00	.08			Slow		100	100	70	
Nev.	L. D. A. Prince						Fair		50	75	100	100
N. Y.	Adams & Myers				6.00	1.00	Fair	100	125	75	40	100
N. Y.	G. B. Howe	0				1.10	Fair		100			
N. Y.	F. W. Lesser	0			4.80	1.00	Slow	125	100	100	100	125
N. C.	C. S. Baumgarner							100	100	100	110	110
Ohio.	E. G. Baldwin	0						95	100	100	90	100
Ohio.	R. D. Hiatt	2			5.50	1.00	Fair	100	100	80	80	95
Ohio.	F. Leininger		4.80	.15				150	200	100	100	
Ohio.	J. F. Moore	3			4.00	.75	Slow	100	100	100	100	90
Okla.	J. Heneisen	0						80	75	60	100	100
Okla.	C. F. Stiles	0			5.25	1.25	Slow	85	90	80	100	100
Ore.	E. J. Ladd						Slow	90	90	60	100	20
Ore.	H. A. Scullen	0				1.25	Fair	100	90	90	100	100
Pa.	H. Beaver	1				.60	Slow	100	100	100	90	
Pa.	D. C. Gilham	5			7.00	1.00	Slow	110	105	95	100	105
Pa.	G. H. Rea	0			6.50		Fair	100	100	100	100	100
R. I.	A. C. Miller	0				1.75	Slow	110	110	150	100	70
S. C	A. S. Conradi	0					Rapid	100	100	100	100	100
Tenn.	J. M. Buchanan					1.00	Slow	100	100	100	90	100
Tex.	T. A. Bowden	6				.75	Slow	100	100	50	90	50
Tex.	J. N. Mayes	1	3.00	.08			Rapid	110	110	110	125	125
Utah.	M. A. Gill					.50	Fair	80	80	90	100	75
Vt.	J. E. Crane	0				1.25	Slow	110	120	100	100	100
Va.	T. C. Asher						Fair	100	100	90	90	95
Wash.	W. L. Cox	0			6.50		Fair	90	85	90	90	85
Wash.	G. W. B. Saxton	20		.10		.75	Slow	80	75	100	75	100
Wash.	G. W. York	0			5.50	.80	Slow	65	75	50	75	
W. Va.	W. C. Griffith	0			8.50		Slow	90			100	
Wis.	G. Ditmer	15	3.60	.10	4.80	.75	Slow	90	100	100	100	100
Wis.	F. Hassinger, Jr.	0				.85	Slow	105	100	100	100	100
Wis.	H. F. Wilson	9		.11		1.25	Slow	92	100	100	75	100
Wyo.	A. D. Brown	22	4.50	.09		.85	Slow		50	40	110	

The Smoker
You Ought to Own

THE most important invention in beekeeping, as little can be accomplished without the Bee Smoker.

The *new Bingham Bee-Smoker is the most* efficient and durable machine on the market. The standard for over 40 years in this and many foreign countries, and is the all-important tool of the most extensive honey producers of the world.

Comes with metal legs, metal binding and turned edges. The four larger sizes have hinged covers. The fire grate is of very substantial material, with an abundance of draft holes, the 4-inch size having 381 holes, equal to an opening of 2-inch square.

A valve in the bellows of the larger sizes makes the Smoker respond to the most delicate touch.

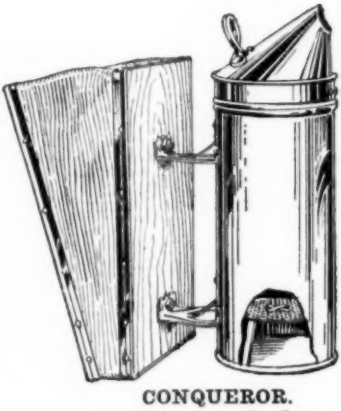
The new Bingham comes in six sizes, including the Big Smoke, which is furnished both with and without shield. The larger sizes are best, as they hold more fuel, give more smoke, require filling less often, and are especially recommended to those who work with their bees several hours at a time.

Write for our complete catalog of bee supplies and accessories. Special circular of all sizes of Bingham Smokers free for the asking.

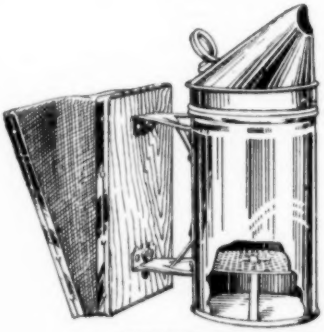
A. G. WOODMAN CO.
238 Scribner Ave., N. W.
GRAND RAPIDS, MICH., U.S.A.

NEW BINGHAM BEE SMOKER
PATENTED

BIG SMOKE—With Shield
Fire Pot, 4 x 10.

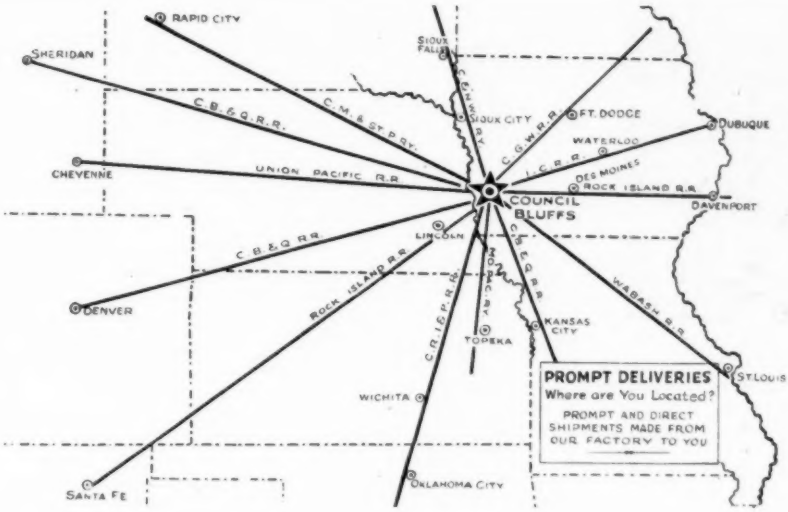


CONQUEROR.
Fire Pot, 3 x 7.



LITTLE WONDER.
Fire Pot, 3 x 5½.

WANT PROMPT SHIPMENTS?



Time is the essential factor in your success in the days just ahead.

Our dealers are getting replenishment orders over this network of roads, in quantity lots. There is a Root dealer near you. Look him up.

Today these dealers and the Council Bluffs organization are ready to serve you, completely and quickly.

AT YOUR SERVICE

FOSTER HONEY & MERC. CO.,
Boulder, Colo.

THE BORTON APIARIES,
Scotland, S. D.

P. J. POOLEY,
Mitchell Trans. & Storage Co.
Mitchell, S. D.

C. F. BUCK,
Augusta, Kans.

GRISWOLD SEED CO.,
Lincoln, Nebr.

THE WERTZ SEED CO.,
Sioux City, Ia.

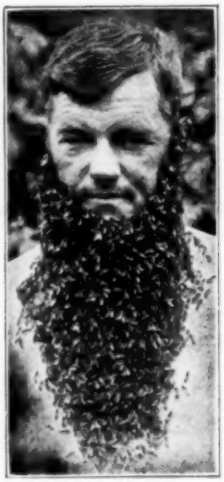
THE RAPID CITY IMPLEMENT CO.,
Rapid City, S. D.

THE RODMAN COMPANY,
301 Delaware Street,
Kansas City, Mo.

CARHART LUMBER CO.,
Wayne, Nebr.

LODGE GRASS APIARIES,
Lodge Grass, Mont.

THE A. I. ROOT COMPANY OF IOWA
COUNCIL BLUFFS, IOWA



QUEENS

Queen-rearing at our apiary is now in full blast. The weather is ideal, and flowers are giving up their nectar in a manner most conducive to the production of high-grade queens. No work nor expense is spared to produce the queens we send out. Each queen is reared by me personally and is the very best I know how to produce.

REMEMBER that I guarantee pure mating, safe arrival and that every queen is first class in every respect. If any proves otherwise I want to know of it, that I may have the opportunity of replacing her.

REMEMBER also it is the colony headed by a good queen that gets the big yield of honey and I believe you will find mine are just what you want.

"Several years ago I had two of your queens and found them very good, in fact better than any other Italians I ever had."—J. F. Fattig, Pataskala, Ohio.

"Yes, the other breeder I got of you in 1919 was the finest queen I ever saw, all the way around."—Cecil B. Hayes, Miami, New Mexico.

"The queen I got of you last fall is the best I ever saw." Loel M. Seelye, Avon, New York.

QUEEN PRICES

BEFORE AUGUST 1.		AFTER AUGUST 1.	
1 to 4 inclusive.....	$2.50 each	1 to 4 inclusive.....	$2.00 each
5 to 9 inclusive.....	2.45 each	5 to 9 inclusive.....	1.95 each
10 or more.....	2.40 each	10 or more.....	1.90 each

Breeding queens for the season....$10.00 each.
Jay Smith Introducing Cage....75c each.

Send for our Queen Catalog, and also folder describing our Introducing Cage, which makes queen introduction safe and sure.

JAY SMITH, Route 3, VINCENNES, IND.

Another $200.00 Queen

A descendant of the Root's famous two-hundred-dollar queen was shipped by us to Mr. C. B. Hamilton of Michigan on April 15, 1921, with a two-pound package of bees and produced 577 finished sections of comb honey that sold for $168.00. (See Gleanings for March, page 167.) Mr. Hamilton says this queen kept 20 Standard Hoffman frames filled with brood during the season. THIS BREAKS ALL RECORDS SO FAR.

We have secured this queen for a breeder and we are now booking orders for her queens at the following prices, safe arrival, satisfaction and freedom from diseased guaranteed.

1 untested	$ 1.00
12 untested	10.00
1 select untested...	1.50
12 select untested...	13.50

We will have no tested queens from this one ready for shipment before July 1, but can supply tested queens of the same strain at any time.

1 tested	$ 1.75
12 tested	16.00
1 select tested.....	2.25
12 select tested.....	20.00

J. M. CUTTS & SON, R. F. D. 1, MONTGOMERY, ALA.

Why These Queens and Bees?

A beekeeper should never buy a queen nor a pound of bees from any queen or bee rearer till he has asked himself this question: "Why should I buy my queens and bees of this dealer?"

We can answer that question when asked of us very briefly:

For more than 50 years we have been breeding up to the Root Quality Queens and Bees. We do not believe that better bees or queens are reared anywhere in the world today. What we try to do, is to rear THE BEST.

We breed queens with special view to the honey-gathering quality of their bees. We have had this one chief purpose in breeding constantly in mind all these years. We have it uppermost in our minds today.

THE DIFFERENT GRADES OF QUEENS.

Italian queens are distinguished from blacks by three yellow bands on the upper part of the abdomen. Leather-colored Italians show three stripes of dark-yellow leather color.

An untested queen is one which is sold after she is found to be laying, not having been previously tested.

A tested leather-colored queen is one which has been examined by the breeder and her bees found to be uniformly marked with at least three dark-yellow bands.

Select queens of any of the grades are those which show better color, size, shape, etc. Frequently select untested queens develop into fine breeding queens.

PRICE OF QUEENS—Up to June 30.

	1 to 9.	10 to 24.	25 to 49.	50 to 99.	100 or more.
C312000—Untested	$2.00 each.	$1.80 each.	$1.70 each.	$1.60 each.	$1.50 each.
C313000—Select Untested...	2.50 each.	2.25 each.	2.10 each.	2.00 each.	1.85 each.
C314000—Tested	3.00 each.	2.70 each.	2.55 each.	2.40 each.	2.25 each.
C315000—Select Tested	3.50 each.	3.15 each.	3.00 each.	2.80 each.	2.60 each.

July 1 to November 1.

C312000—Untested	$1.50 each.	$1.40 each.	$1.35 each.	$1.25 each.	$1.15 each
C313300—Select Untested...	2.00 each.	1.90 each.	1.80 each.	1.70 each.	1.60 each.
C314000—Tested	2.50 each.	2.35 each.	2.25 each.	2.10 each.	2.00 each.
C315000—Select Tested	3.00 each.	2.85 each.	2.70 each.	2.25 each.	2.40 each.

Note the large saving to be made by taking advantage of our low prices on quantity lots.

OUR GUARANTEE ON QUEENS.

We guarantee safe arrival of queens sent in mailing cages. We agree to refund the money or replace the queen if the one first sent arrives dead; provided the beekeeper receiving the dead or unfit queen returns her at once and in her own shipping cage, properly marked with name and address of sender. No delay in returning the queen can be permitted. This guarantee applies only on queens sent to customers in the United States and Canada.

PRICES OF BEES IN COMBLESS PACKAGES BY EXPRESS.
Up to August 15.

C310700—1-pound package ..... $3.00; 25 or more packages, $2.85 each.
C310800—2-pound package ..... 5.00; 25 or more packages, 4.75 each.
C310801—3-pound package ..... 7.00; 25 or more packages, 6.60 each.

Add price of queen wanted to package price given above.

OUR GUARANTEE ON BEES SHIPPED BY EXPRESS.

We agree to make good any loss to bees in transit, provided consignee secures such notation as will cover any apparent damage done while in transit, on express delivery receipt, signed in full by express agent, **receipt to be mailed to us at once** with letter giving full particulars, on receipt of which replacement will be made immediately. **The guarantee does not apply on bees shipped to foreign countries.**

Mail all queen and bee orders direct to Medina or to our nearest branch office.

THE A. I. ROOT COMPANY

WEST SIDE STATION **MEDINA, OHIO, U. S. A.**

Superior Italian Queens

We have had more orders than we could fill each year, yet we are striving just as hard to produce better queens each year as we would if we had more queens than orders, and we believe that each year we are able to produce queens of a little higher quality. We are not in the business for the time being, or to get every dollar out of it we can, but because we like to rear queens and we want to give you value received for your money. After we have reared the best possible queens for you, we want to put them to you, not just alive, so we can get your money, but in the best possible condition. Everything we sell is guaranteed. AFTER JUNE 15th UNTESTED QUEENS IN LOTS OF 10 OR MORE, 75c EA.

UNTESTED TO JUNE 15th: One, $1.25; ten or more, $1.00 each.
TESTED TO JUNE 15th: One, $2.00; ten or more, $1.75 each.

——— AFTER JUNE 15th ———

UNTESTED ..... One, $1.00; ten or more, $0.75 each.
TESTED ..... One, $1.75; ten or more, $1.50 each.

We have 2,000 Tested Queens, reared late last fall that we will supply at our convenience at $1.00 each, or ten or more at 80c each.

THE STOVER APIARIES, MAYHEW, MISS.

A Big Honey Crop

Have you learned the secret of a bumper honey crop? If you will head your colonies with young prolific queens, your yield will surely be greater. Buy your queens from L. L. Forehand. They have been on the market for over twenty years. THEY ARE BRED FROM IMPORTED MOTHERS. They cannot be beaten for honey-gathering, gentleness, prolificness, disease-resisting and non-swarming.

Guarantee

I guarantee every queen will reach you alive, to be in good condition, that she will be purely mated and to give perfect satisfaction. I will return your money or replace queens that are not satisfactory in every way. Safe delivery guaranteed in U. S. and Canada only.

	1	6	12	100
Untested	$1.25	$6.50	$11.50	$0.90 each
Selected Untested	1.50	7.50	13.50	1.00 each
Tested	2.00	10.00	18.50	1.50 each
Selected Tested	2.75	15.00	27.00	2.15 each

Send for circular. It contains useful information.

L. L. FOREHAND, Fort Deposit, Alabama

Collier's
Bees and Queens

Breeding Queens Imported from Italy.

THREE-BANDED ITALIANS ONLY.

Shipped by return mail.

Let me have your order for the 1922 season. My queens are bred by men who know how. Every order given my personal attention. All queens reared in strong two-story, ten-frame hives, under natural conditions.

Improve your weak, run-down colonies by using young, vigorous, three-banded Italian Queens from my imported stock.

You take no risk buying from Collier. If you are not satisfied I will replace or refund your money. Safe delivery guaranteed.

Prices: Untested—1, 80c; 6, $4.50; 12, $8.50; 100, $68.00. Select Untested, 1 to 25, $1.00 each. Tested, $2.00, or $20.00 doz. Select tested, $3.00, or $30.00 doz. Pound packages with select untested queen: 1-lb. package, $3.50 each; 2-lb. package, $5.00. Write for prices on larger lots.

D. E. COLLIER

RAMER - - - - ALABAMA

ONLY

90c A QUEEN

QUEENS BY RETURN MAIL

Mr. Beekeeper:—We have the stock, equipment and experience, and can give you prompt, satisfactory service. We are not going to say that we have the best bees in U. S. A., but we do say that we have as good as can be bought for the money. Give NORMAN BROS.' 3-banded Italian bees and queens a trial and see for yourself. You risk not a brown penny; if you are not satisfied, notify us and we will replace or refund your money. Isn't this a fair proposition to any one that purchases queens and bees? Our bees are hardy, prolific, gentle and honey-gatherers.

Prices:	1	6	12	100
Untested Queens	$0.90	$5.00	$9.00	$70.00
Select Untested	1.15	6.00	11.00	85.00
Tested Queens	2.00 each			
Select Tested	2.50 each			

One 2-lb. package bees, $3.00; 12 or more, $2.85 each. Add prices of queens wanted. We guarantee pure mating, safe arrival and free from all diseases.

Norman Bros. Apiaries

NAFTEL, ALABAMA.

Golden Italian Queens

When you buy you want the best. The Golden Italian Queens are better by the test. Untested, $1.00 each; $10.00 per doz. Selected Untested, $1.25 each, $12.00 per doz. Satisfaction guaranteed.

E. A. SIMMONS

GREENVILLE, ALABAMA.

Four Things to Remember

1. *Quality Queens*
2. *Satisfactory Service*
3. *Reliability*
4. *Dependability*

On these four points I am prepared to take care of your wants.

Untested Italian Queens

June, each, $1.50; 12, $15.00. After July 1, each, $1.25; 6, $7.00; 12, $13.00; 25, $25.00.

Safe arrival and satisfaction guaranteed.

J. B. HOLLOPETER

ROCKTON, PENNA.

DON'T BE CONFUSED

¶ In buying a larger hive than the ten-frame Langstroth hive. Quinby invented an eight-frame hive with frames about 11¼ inches deep. It was long ago found inadequate in size and was made into a ten-frame hive, a size we have offered for some years.

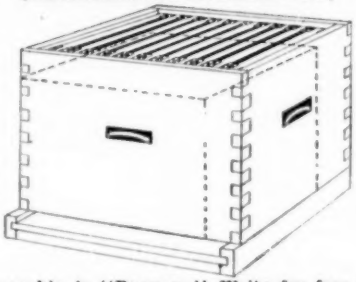
¶ Charles Dadant found the ten-frame Quinby depth hive needed another frame. He also found it a beekeeping necessity to change this hive further, and evolved the 1½-inch spacing from center to center of the frames. This is the real principle to be considered in the

MODIFIED DADANT HIVE

(REGISTRATION APPLIED FOR)

Deep frames 11¼ inches. Frame space ventilation, swarm control easier, 6¼-inch extracting frames.

Large one-story brood-nest, adequate **winter** stores, greater brood-room, standard covers, bottoms.



Present equipment may be used as super equipment on **Modified** Dadant brood-chambers. Covers and bottoms for this hive are the familiar metal roof cover with inner cover and regular standard bottoms, except for larger dimensions.

The standard of workmanship is "Beeware." Write for free booklet on this hive to

G. B. LEWIS COMPANY, Watertown, Wisconsin.
DADANT & SONS, Hamilton, Illinois.

There's a Distributor near you.

3-Banded *Goldens*

Quality Queens

Our queens are as fine as can be had, reared from the finest strains of Italians, and we feel sure you will be well pleased with our queens, for we spare no trouble whatever to rear as fine a queen as it is possible to rear from the finest honey-gathering strain, so as to be sure to please.

Quality Queens :: Low in Price

Untested.....1 to 12, $1.00 each
Sel. Untested, 1 to 12, $1.25 each
Tested one grade, Select, $2 each

Wings clipped free on request. Entire satisfaction and safe arrival guaranteed in U. S. and Canada.

Ohio Valley Bee Company

Catlettsburg, Ky.

First in Alabama to Ask for and Receive Inspection for Disease.

All Apiaries Found Free From Disease.

Certificate Signed:
A. D. Worthington, Inspector.

After twenty-six years of Select Breeding we have a clean, bright three-banded strain of Italian bees that are unsurpassed for their disease-resisting and honey-gathering qualities.

Select Untested Queens, $1.00 each, 12 or more, 90c each.

Select Tested Queens, $1.50 each; 12 or more, $1.40 each.

We guarantee our queens to give absolute satisfaction and to arrive in perfect condition. They have pleased thousands of others. Give them a chance to please you. They know how. Our little booklet free for the asking. It tells all about our bees and how to handle them for best results.

M. C. BERRY & CO.,
Box 697. Montgomery, Ala.

June is the Month of the Busy Bees and Busy Beekeepers

We are ready to supply your needs and fill your orders promptly.

At this time of year you want SERVICE. Try us. We will not disappoint you.

Yours for a season that will be "the best ever."

F. A. SALISBURY
1631 West Genesee Street,
Syracuse, N. Y.

Big Reduction
--ON--
Bee Supplies

Shipping cases.....$30.00 per 100
Slotted section-holders...$3.00 per 100
Sections, 1⅞, No. 1...$10.00 per 1000
Job lots of frames, regular size.....$3.00 per 100
Standard Hoffman frames, 9⅛ deep .....$4.50 per 100
Unspaced wedged top-bar frames, 9⅛ deep.....$2.75 per 100

Send for Catalog and Price List.

CHARLES MONDENG
146 Newton Avenue N. and
159 Cedar Lake Rd.
MINNEAPOLIS, MINN.

Better Way to Garden

Don't do garden work the slow back-breaking way. You can grow a far better garden, easier and with much less time and work.

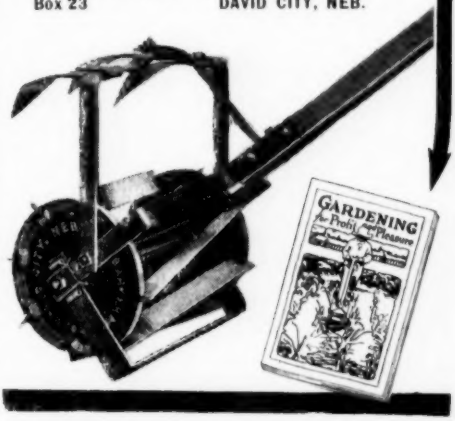
BARKER
WEEDER, MULCHER AND CULTIVATOR
THREE MACHINES IN ONE

Simply push the BARKER along the rows (like a lawn mower). Eight blades revolving against a stationary underground knife destroy the weeds and in same operation break up the surface crust into a **level, porous, moisture-retaining mulch.** Aerates soil. Intensive cultivation. "Best Weed Killer Ever Used." Has leaf guards, also shovels for deeper cultivation. A boy can run it—do more and better work than 10 men with hoes.

Write Us Today for FREE Booklet.

Let us tell you about this machine and how to raise bigger, better gardens—make gardening a pleasure. A valuable book, illustrated. Gives prices, etc. A card brings it. Write us today. Use coupon below.

BARKER MFG. CO.
Box 23 DAVID CITY, NEB.



Barker Mfg. Co., Box 23, David City, Neb.

Gentlemen: Send me postpaid your free booklet and Factory-to-User offer.

Name .....

Town .....

State..... Box or RFD.....

SCOTT QUEENS ARE GOOD QUEENS

MY QUEENS ARE GETTING RESULTS.

Among my hundreds of colonies and for my customers. One writes: "Dear Mr. Scott: Please book me for ½ dozen queens. Those I got from you last season have made 150 lbs. comb honey so far this season. Yours truly."—(Name on request.)

UNTESTED GOLDEN OR THREE-BANDED QUEENS.

June 1 to July 15: One, $1.50; six, $8.00; dozen, $15.00. Pure mating, safe arrival and satisfaction. No disease. Circular on request.

ROSS B. SCOTT, LA GRANGE, INDIANA.

Thagard's Italian Queens

Bred for Quality

The new Postal Law restricts the importation of queens from Italy, owing to the mite which causes the Isle of Wight disease.

Dr. E. F. Phillips has examined our imported bees from Italy and reports there is no evidence of the mite, nor Isle of Wight disease.

We are breeding from breeders obtained from the foremost strains in Italy. And mated to our own famous strain. Universities, Agricultural Colleges, Demonstration Agents, backlotters, America's largest honey-producers and queen-breeders have purchased thousands of our queens bred from our imported stock this spring.

Since the new Postal Law went into effect the demand is growing greater daily. WHY? Because for the next few years there will be no new blood imported from Italy. In buying our queens you are assured of getting imported stock, and free of disease. Every queen is guaranteed to please you or your money refunded.

UNTESTED QUEENS, EACH—1 to 11, $1.00; 11 to 49, 95c; 49, to 99, 80c; 100 or more, 75c.

The V. R. Thagard Co.
Greenville, Alabama

We Are Prepared to Take Care of Your Rush Orders

We ship thousands of bees all over the U. S. A. and Canada. Special attention given to small orders. Queens bred from the best honey-gatherers with all other important points taken into consideration. Safe arrival guaranteed. Send for special circular for shipping after May 15th. Can take care of your rush orders for shipping before May 15, at the following prices:

1-pound package, $2.60 each; 25 or more, $2.50 each.
3-pound package, $5.25 each; 25 or more, $5.00 each.
2-frame Nuclei, $3.75 each; 3-frame Nuclei, $5.25 each.
2-frame with 1 pound extra bees.....$5.25 each.
1-frame with 2 pounds extra bees.....$5.25 each.
(Queens free when ordering packages.)

PRICES OF QUEENS.

Untested: 1, $1.05 each; 25 or more, 91c each; per 100, $85.00.
Selected Untested, $1.30; 25 or more, $1 each.
Tested, $1.75; 25 or more, $1.50 each.

NUECES COUNTY APIARIES, CALALLEN, TEXAS
E. B. AULT, Proprietor

3000 Monthly Capacity

65c EACH

Prompt Shipment

Untested Queens

In order to keep working at full capacity we are making a big cut in the price of

Forehand's Three-Bands

The Thrifty Kind

Thirty years of experience go into the rearing of our queens. Select breeding for over a quarter of a century brings them up to a standard **surpassed by none but superior to many.**
We guarantee pure mating and satisfaction the world over. Safe arrival guaranteed in the U. S. and Canada. For the balance of the season we are selling bees in combless packages only. Send in your order at once.

UNTESTED QUEENS EACH.

1, $1.00; 6 to 11, 95c; 12 to 49, 90c; 50 to 99, 85c; 100 to 249, 80c; 250 to 499, 75c; 500 to 1000, 65c. Prices quoted on other grades upon application.

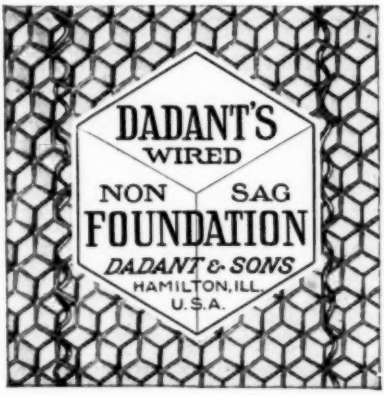
POUND BEES.

1 one-lb. pkg...$2.00; 25 and over, $1.90
1 two-lb. pkg... 3.50; 25 and over, 3.25
1 three-lb. pkg.. 5.00; 25 and over, 4.75
Catalog sent free.

W. J. FOREHAND & SONS, Fort Deposit, Alabama

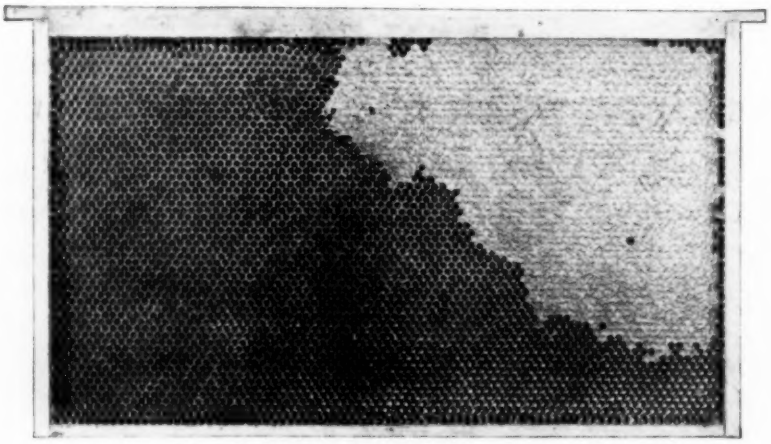
Another Step Forward!

Cuts Out Cost and Labor of Hand Wiring



Makes Non-Sag All-Worker Comb

The Finished Comb



Note completeness of comb and absence of sagging.

TESTED BY TIME AND USE. Dadant's Wired Foundation is not an experiment of a few months' time, but it is a carefully evolved specialty of a life-time of foundation specialists. It has also been thoroughly tested for several years in large apiaries in all parts of the United States. It is adaptable to any size and style of brood or extracting frame.

COSTS NO MORE. Since Dadant's Wired Foundation cuts out the cost and labor of wiring, its extra price of three cents per pound above the catalog prices of old-style foundation is thus more than returned to the beekeeper.

ASK FOR SAMPLES. A small mailing sample sent free on request. Special Offer—A sample of seven sheets, for either split bottom-bar or old-style one-piece bottom-bar frames, will be sent postpaid, to any address in the United States for $1.00. Specify size desired. Only one sample to a person.

DADANT & SONS, Hamilton, Illinois

Wired Foundation is sold by all distributors of Lewis "Beeware" and Dadant's Foundation. Send them your orders. Catalog and Prices on Foundation, Bee Supplies, Beeswax, Wax Working into Comb Foundation and Comb Rendering, for the asking.

GLEANINGS IN BEE CULTURE

JUNE, 1922

EDITORIAL

THE editor of The Bee World states in the April issue of that journal that the outbreaks of Isle of Wight disease recently discovered in France and Switzerland "have already been traced to importations from England, and such cases have already been controlled." If this is correct it illustrates the danger of indirect importation, unless the importation of bees into this country can be regulated in some such manner as provided in the proposed law now pending in Congress giving the Secretary of Agriculture the power to exclude bees whenever necessary. Our readers should read carefully the editorial on another page, and if favoring this bill should write at once to their Senators and Representatives asking them to support it.

Danger of Indirect Importation of Bees.

A GLANCE at the figures reported by producers for our market page reveals a promising outlook for beekeeping this season. In most cases the number of colonies is reported as normal or above, and the condition of the colonies as well as the honey plants makes a splendid showing. The recent general rains throughout the clover region are a great help to the clover. The honey is being well cleaned up in the markets, so that the marketing problem looks much brighter than it did a year ago when large stocks were still in the hands of the producers. The prospects at present are indeed encouraging, but the next few weeks will tell the story as to what the harvest will be.

What Shall the Harvest Be?

THE Bureau of Crop Estimates and the Bureau of Entomology, working co-operatively, are making a study of the colors of honey in order to work out color standards for extracted honey. This is done by means of a color-measuring device by which all colors can be measured instead of only amber, thus giving accurate color measurements.

After a great variety of samples from all parts of the country have been measured it will be possible to establish grades based on color, and define accurately the limits of each grade, so that in case of dispute it will be possible to determine exactly in which grade the sample in dispute falls.

The establishment of accurately defined grades for honey for the United States by the Department of Agriculture should be of great benefit to beekeepers in marketing their honey.

Establishing Government Color Grades for Honey.

IN using the Multiplex foundation-fastener or any device for fastening foundations in sections in which a hand tool is used to melt the edge of the foundation, many seem to think that the blocks supporting the sections should be placed on the bench at an angle. For the greatest ease and most rapid work the blocks should be placed in a horizontal position and the operator should stand facing the ends of the section-holders. This permits a free and natural handling of the heated knife, thus avoiding the twisted and cramped position necessary when the blocks are placed at an angle. With the freedom of movement afforded by having the blocks in a horizontal position, the operator can easily fasten the 28 sheets of foundation in less than one minute without reheating the knife.

Fastening Foundation in Sections.

E. M. COLE, writing in the American Bee Journal, May issue, takes issue with the statement in Farmers' Bulletin 503, published in 1912, to the effect that all effective treatments for swarming, such as shaking, dequeening or separating the brood and the queen, involve "a temporary disturbance in the continuity of the emergence of brood."

This statement was written by the Editor more than 10 years ago, while he was connected with the Bureau of Entomology at Washington, D. C., and today, after 10 years further study of the swarming problem, he can see no reason for changing his opinion in regard to the matter.

Before that statement was written, the bee journals published in the English lan-

Effect of Emerging Bees Upon Swarming.

guage were searched from volume I up to that time and an abstract made of every swarm-control plan published. The same thing was done with the books on beekeeping published in English. These abstracts were then carefully studied, and, after eliminating those plans which are not effective in swarm control, the others were sorted into groups on the basis of similarity in principle. Finally, out of the great mass of apparently conflicting methods and opinions, all of the effective remedies for swarming were found to come under three general heads, viz., taking away the brood, taking away the queen and separating the brood and the queen within the hive. One plan involved killing the brood with the uncapping knife, but this is simply one way of taking away the brood. In other words, in the final analysis every one of the hundreds of swarm-control plans thus far given in beekeeping literature either creates a condition of the colony comparable to a certain degree to the recently hived natural swarm or the parent colony.

But the most interesting thing in all this is the fact that every remedy for swarming, that has proven successful thus far, involves "a temporary disturbance in the continuity of the emergence of brood."

Whether this break in the emergence of brood has anything to do with the bees' giving up swarming is another question. In writing the bulletin referred to above the author was careful to avoid saying that it does, although personally he believes that the break in the emergence of young bees is an important factor in causing the bees to give up swarming.

Mr. Cole points out that when the queen is taken away all queen-cells destroyed at the time of taking away the queen, and again 10 days later when a young laying queen is given, the bees give up swarming although the break in the emergence of young bees does not occur until 11 days later; and that if this break in emergence has anything to do with the giving up of swarming the bees would thus react to a condition 11 days before it arrives, which, of course, is not at all probable.

The error Mr. Cole makes here is in assuming that the swarming impulse disappears within 10 days after taking away the queen. While the colony is queenless, of course it can not swarm or at least it usually does not, although such colonies sometimes swarm and return to the hive as if the bees thought they had a queen. After such colonies are made hopelessly queenless by destroying the queen-cells ten days after taking away the queen, the swarming impulse is sometimes still so strong that if a virgin queen or even a young laying queen is given immediately the colony may swarm, leaving the parent colony hopelessly queenless. In comb-honey production when a laying queen is given after a period of ten days of queenlessness, the colony often proceeds to build queen-cells as soon as young larvae from the new queen are present, and under some conditions will swarm within a week after the new queen begins to lay.

In their early experiments to prevent swarming by removing the queen when producing comb honey, Elwood and Hetherington found it necessary to keep the colony queenless at least 18 days, thus making in most cases 21 days before the new queen would begin to lay after being released from the introducing cage. Gradually this time has been shortened as better methods of causing the bees to give up swarming have been worked out, so that it is now possible to get rid of the swarming impulse to a sufficient degree by 10 days of actual queenlessness.

Of course in extracted-honey production the 10-day period is usually sufficient if the management is good, but this is by no means true for all localities in comb-honey production. The influence of a large number of recently emerged young bees in the brood-chamber is well illustrated by the ease with which recently hived swarms can be induced to swarm again within 10 days or two weeks after being hived by shaking the young bees from the parent colony in with the swarm at the time of moving the parent colony to a new location a week after the swarm issued to prevent after-swarming. The Editor has done this in scores of cases in producing comb honey.

The break of about two weeks in brood-rearing, which occurred last year in May in the northern states, resulted in a season of no swarming in those localities where the honey flow closed early in July, though there was swarming later in localities having a later honey flow. This break in brood-rearing was noted editorially in this journal at that time, page 409, with the prediction that there would be no swarming during the usual swarming season in portions of the clover region. In the Editor's apiaries in northern Indiana only one colony out of about 200 colonies started queen-cells during the swarming season, this one being apparently a case of supersedure. The colonies were exceedingly strong and were run for comb honey, the yield being an average of a little over three supers per colony. The break in brood-rearing is apparently the only explanation of the total lack of swarming in this case.

The Isle of Wight Disease Bill.

THE bill to regulate the importation of honeybees into this country, mentioned in our last issue, was introduced into the House of Representatives on April 21 as House Bill 11396 by Representative Haugen, Chairman of the Committee on Agriculture. It was also introduced in the Senate on April 25 as Senate Bill 3506 by Senator Norris, Chairman of the Agricul-

tural Committee of the Senate. The bill as orginally introduced is as follows:

AN ACT TO REGULATE THE IMPORTATION OF THE HONEYBEE (APIS MELLIFICA).

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That it shall be unlawful for any person to import or offer for entry into the United States the honeybee (Apis mellifica) except for experimental or scientific purposes by the United States Department of Agriculture upon such conditions and under such regulations as the Secretary of Agriculture and the Secretary of the Treasury shall prescribe. Provided: That the Secretary of Agriculture and the Secretary of the Treasury may make regulations admitting honeybees from countries where no dangerous diseases of honeybees exist.

That any person who shall violate any of the provisions of this act shall be deemed guilty of a misdemeanor and shall, upon conviction thereof, be punished by a fine not exceeding $500 or by imprisonment not exceeding one year, or both such fine and imprisonment, in the discretion of the court.

The hearing on this bill before the House Committee was held on May 4. The committee decided to amend the bill as follows: In place of the proviso, read: "And provided further, that such adult honeybees may be imported into the United States from countries in which the Secretary of Agriculture shall determine that no diseases dangerous to adult honeybees exist, under rules and regulations prescribed by the Secretary of the Treasury and the Secretary of Agriculture." The committee voted unanimously to report the bill out favorably.

Judging from the letters coming to this office the beekeepers of this country are practically unanimous in favor of the enactment of such a law to protect the industry from a possible invasion of the Isle of Wight disease into this country. Not a single protest has been received direct at this office, and many have written in favor of the bill. The American Bee Journal, however, reports having received some letters opposing the bill.

The opposition apparently arises through a misunderstanding of the provisions of the bill, for we understand that those who are opposing the bill are in favor of preventing importations from those countries where the Isle of Wight disease is known to exist but permitting importation from all other countries. This was the first thought of the committee which suggested the law, for it was the intention from the beginning that Canada should be exempted; but, on investigation of the legal phases involved, it was found necessary to draft the law to exclude bees from all countries, except those which may be exempted by the Secretary of Agriculture and the Secretary of the Treasury. In addition to meeting the requirements of the lawmakers, this plan would permit immediate action to exclude bees from any country from which shipments are permitted under the provision of the bill if the Isle of Wight disease should be found, instead of waiting until Congress could take action to amend the law to exclude bees.

Since the bill clearly specifies that the Secretary of the Treasury and the Secretary of Agriculture may make rules and regulations under which bees may be imported from countries in which no disease of adult bees exists, it is clear that the objections of those who have opposed this bill have all been met. Surely, no one in this country who might wish to import a few queens from some country where the Isle of Wight disease may now exist, would be willing to endanger the whole beekeeping industry in this country simply to secure a few queens of some obscure race. Beekeeping in this country has recently grown into an important industry and deserves any protection of this sort that can be had.

Both Canada and Australia have taken action to prevent the importation of the Isle of Wight disease. In these countries immediate action was possible, because previously enacted quarantine laws gave to the proper officials the power to issue an order prohibiting the importation of animals likely to introduce dangerous diseases. Such an order was issued by the Governor-General of Australia on January 1, 1922, prohibiting the importation of "bees, used or second-hand hives or hive-goods or products (excepting honey and wax) from the United Kingdom" and by the Dominion Minister of Agriculture, Dominion of Canada, effective May 1, 1922, prohibiting the importation into Canada of "bees, used or second-hand hives, or raw hive goods or products excepting honey or wax from the Continent of Europe." Not having such a law, this country must wait until Congress can act to prevent importation of bees from countries where the Isle of Wight disease may exist.

The exclusion of bees from the mails coming into the United States, by the order of the Post Office Department, effective March 21, of course stops importation through that channel, but many bees and queens are shipped to this country through channels other than the mails. If this bill becomes a law, if the Isle of Wight disease should be found at any time in a country which has been exempted by the Secretary of Agriculture and the Secretary of the Treasury because the disease has not previously been found there, the embargo can be immediately restored without an act of Congress.

Since some opposition has developed to the bill, which is now in both the Senate and House of Representatives, it is more important than ever that beekeepers who desire the protection afforded by this bill write to their Senators and Representatives asking them to support it. A letter should also be written to Senator Norris, Chairman of the Agricultural Committee of the Senate, Washington, D. C., and to Representative Haugen, Chairman of the Agricultural Committee of the House of Representatives, Washington, D. C., in support of the bill. These letters should be written immediately on receipt of this journal and sent out in the next mail.

CHOOSING A LOCATION

A Timely and Important Subject in Migratory Beekeeping. How to Choose the Apiary Site

By M. C. Richter.

WHERE is the best place to locate? This is the eternal question that is ever in the minds of most beekeepers and prospective beekeepers alike. The question does not resolve itself into the following simple equation:

> Honey Plant Acreage + X Number of Colonies equals X pounds per Colony Surplus.

The foremost problem concerns itself with the honey plants themselves. The question of overstocking a location is not nearly so important.

In our beekeeping practices we are fundamentally dependent on bee behavior. When it comes to the choice of a location, we must have a knowledge of plant behavior, climatic conditions and soils. It must be admitted that our success depends in a very large measure on the proper choice of locations. Our literature is very deficient in this respect. Only recently have we received information on honey plant regions and on the secretion of nectar, and we owe our thanks to Dr. Phillips of Washington who has mapped the clover, buckwheat and tulip tree regions of the East. California must have some wonderful beekeeping regions that as yet await exploration. When such are made known through careful research work, it will prove of inestimable value to the state. At present there is but little information that may be imparted.

Conditions Influencing Nectar Secretion.

There are a few general considerations that are known, such as: A plant growing under suitable environmental conditions shows a tendency towards increased nectar secretion, and also that higher latitudes and altitudes show a like tendency. We know also that there is a tendency towards a greater flow of nectar when cool nights are followed by warm days; but there is another factor that is directly connected with the above, namely, the amount of moisture that the soil contains. However, the moisture should not be excessive, nor should it be too deficient, for excessive moisture tends towards vegetative growth, while a scarcity of moisture means that the flowers will soon fade and the plants then will bend their energies towards the reproductive stage.

On account of our meager knowledge this article can offer but little assistance. It is more the intention here to point out some of the problems that are to be solved and to solicit aid among Gleanings' readers in the collection of data pertaining to nectar secretion. In that way we can make excellent progress and such material will help the investigator.

A Sage Range.

For this purpose we will suppose, for example, that we are looking for a sage location, and we will bear in mind that much the same problems confront the beekeeper in his choice of a location in other plant regions. We make this choice because it is a popular one. Sage honey has a wonderful reputation, commands a topnotch price, and when pure does *not* granulate. For the latter reason it is a table honey par excellence. Dealers and grocers favor both the comb and the clear honey.

Geographical Distribution.

The first step in the study of a honey plant is in mapping its distribution. In the case of black sage, we find that it inhabits the Coast Range Mountains with its northern boundary in the vicinity of Mt. Diablo. From there it extends southward through San Diego County into Mexico. It favors slopes with a south, southwest and west exposure. The plant ranges along the ocean to several thousand feet above the sea level, and favors a soil containing lime. Sage, in its struggle for existence, has settled in the above region. It has not increased its distribution to the north or east because the environmental conditions in these places

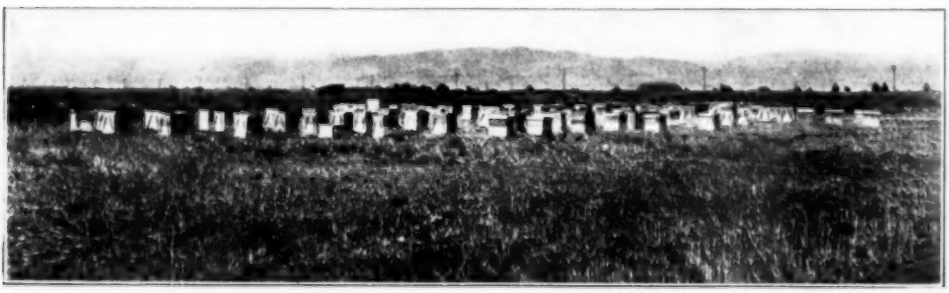


Fig. 1.—Unprotected bees that receive the full benefit of sweeping winds not only consume a larger amount of stores, but build up more slowly in the spring.

were not suited to the plant's welfare. In like manner, northern slopes were found unadaptable. Owing to various factors, the distribution of black sage has been confined to the limits outlined above. It has not extended further owing, perhaps, to unfavorable climatic conditions, or to the fact that it was encroaching upon favorable environmental conditions of other plant life, and was consequently choked out. In some parts of the black sage region, the sage has found its optimum habitat—that is, it has found the most favorable condition for its growth and reproduction. Where the plant is found with a most luxuriant growth, and in great abundance, to the exclusion of almost all other plants, it may be said that it has found its optimum habitat. Under these situations, generally speaking, the plant would secrete a greater amount of nectar.

Fig. 2.—Eucalyptus groves make good windbreaks, but afford too much shade during the winter months.

Environmental Conditions.

What are then the environmental conditions best suited to the black sage? They concern themselves with latitude, altitude, character of soil and the moisture content thereof, and various climatic conditions, such as rainfall, temperature, humidity and seasonal variations, to say nothing of the electrical condition of the air. There is a great deal to learn. The secretion of nectar should be measured at various latitudes and altitudes, on different types of soils, on soils varying in the degree of moisture which they contain. Likewise, climatic records, relative to rainfall, maximum and minimum temperatures, humidity of the air, barometric pressure and wind direction, should be made. From the standpoint of beekeeping practices, it would be interesting to know at what hours of the day nectar secretion commences or ceases, for this phenomenon certainly varies with different honey plants.

The relationship that fog bears to nectar secretion is another important matter. In southern California, many beekeepers have felt that fog is a detriment while the sage is in bloom, whereas in central California we know that it has a beneficial influence in that it helps retain the moisture in the soil.

Making Records.

Many of the above observations we can not make. Not only do we not have the facilities but likewise we have not the time. We can, however, put an average colony of bees on a pair of scales and record each evening either the loss or gain in weight during the day. The maximum and minimum temperatures can likewise be recorded without loss of valuable time, and perhaps rainfall data as well. Such observations as the date of the last spring frost, appearance of first sage bloom, commencement of flow, are very valuable and should be made by all beekeepers. Such information not only helps in the selection of a range, but also will tend to improve our beekeeping methods. In time, it is hoped that we will know the proper night temperatures, as indicated by Dr. Phillips in his talks at our short courses, for sage secretion the following day. When this is known, can we not plan our day's work to much better advantage? If after a series of years we have studied our seasonal variations, we shall be in a better position to forecast the time and duration of a honey flow. In migratory beekeeping this will prove very valuable.

Let us study the effects of hard winters followed by either severe, mild, wet or dry springs, or any other combination that may be presented. A close study of plant be-

havior and the climatic conditions affecting it will help us all immensely in beekeeping practices—it will mean bigger crops.

Minor Honey Sources.

In choosing a sage location we must also have in mind other sources of nectar. An ideal sage location will afford sufficient nectar for "breeding up" and "filling up." A continuity of nectar secretion is desirable during the two months prior to the sage flow, and again during the fall, so that the bees can fill up for winter. A sage location, then, should contain such spring bloom as manzanita, willow, laurel, alder, wild lilac; and, in the fall, wild alfalfa, wild buckwheat, sumac, honeydew and blue curls. Otherwise the bees will be compelled to consume more sage honey or sugar syrup, unless migratory beekeeping has been resorted to. Furthermore, a good range will never lack sufficient pollen-bearing plants during spring, as well as water during all seasons of the year.

Protective Measures.

It is wise in the selection of a bee location to bear in mind the possibility of forest fires, and to ascertain, if possible, where probable firebreaks might be located. It might also be necessary to consider the possible wholesale grazing of sheep on a range, as sheep in dry seasons are very destructive to sage shoots. Another protective range measure is that of not permitting the introduction of a dark-colored honey, such as horehound, from contaminating a sage region. We likewise choose a range from the standpoint of marketing facilities, and outyard and migratory possibilities; and lastly, some of us will pay a little attention as to whether or not any of our neighbors harbor American foul brood.

The Apiary Site.

The selection of our apiary site is a matter of convenience and protection against inclemency of the weather. Figures 1, 2 and 3 show different types of apiary sites. The first is out in the open, altogether unprotected, and the writer can vouch with absolute certainty that the bees in this unprotected site needed 15 pounds of honey per colony more than protected bees in order to winter and breed up for a honey flow. This yard, although it needed this extra amount of stores, yielded, over a period of six years, an average colony surplus of 156 pounds in the San Joaquin Valley.

Fig. 2 shows a protected yard in a eucalyptus grove. This type of site affords sufficient protection and would be entirely satisfactory were it not for the dampness under the trees during winter. In Fig. 3 we have an ideal windbreak surrounding the apiary, with the southern exposure open admitting plenty of sunlight. Plenty of sunlight at all times can not be overemphasized. Exceptions to this statement are found only in regions like the Imperial Valley.

Overstocking.

On a good sage range the question of overstocking does not so much concern itself with the sage as it does with the bloom which helps out in the breeding-up and filling-up periods.

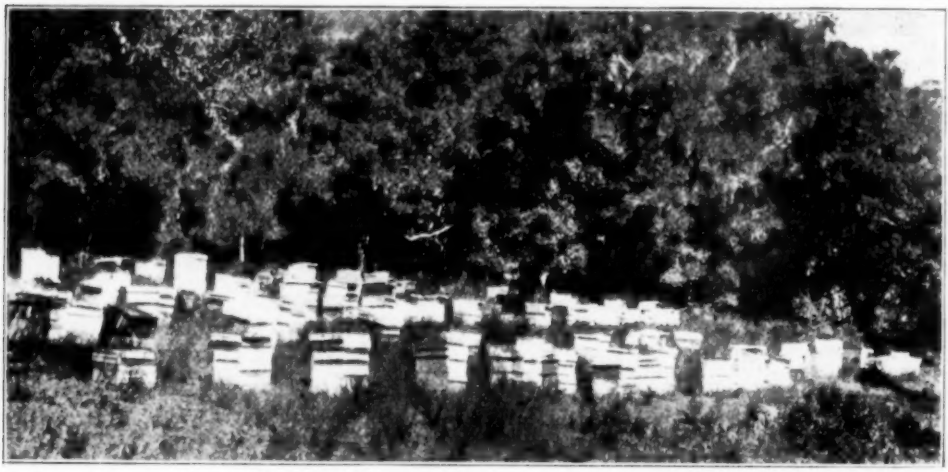


Fig. 3.—The ideal apiary site surrounded by trees except on the south where a flood of sunlight can always enter.

Locations are rarely overstocked during main flows, and the question of overstocking concerns itself only with the caring of the bees over winter and preparing them for next season's crops. Nowadays, the tendency is not to have over 160 to 200 colonies in any one apiary, no matter how good the range may be. It is better policy to have five yards of about 100 colonies each, and have them a quarter of a mile apart, than to have all the bees located in one yard.

The reason for this is the demoralizing effect that is almost sure to take place when bees are worked in large yards during poor bee weather. Small yards elevate the morale of the bees and their keeper and, with the home extracting plant, actually cut down the cost of production.

Big Sur, Calif.

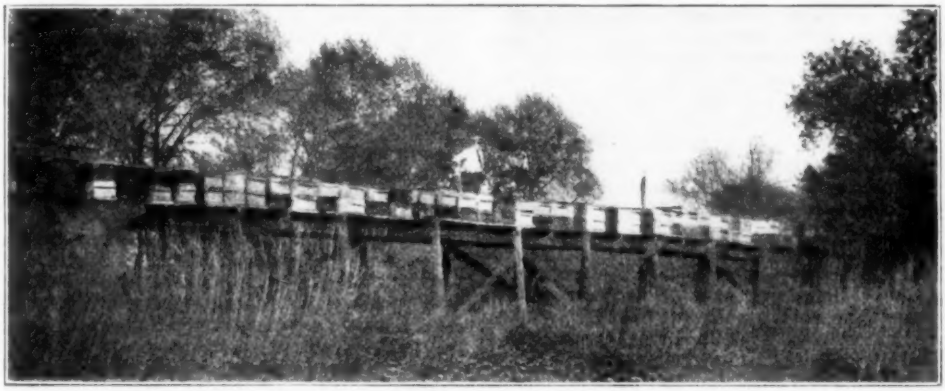


Fig. 4.—In the low lands along the river in the great valleys bees must be elevated, owing to the overflow along the bottom during winter and in May and June when the snows melt in the Sierras.

THE CAUSE OF SWARMING

Has This Elusive Thing Been Discovered at Last After Fifty Years of Searching?

By Geo. S. Demuth

EVER since beekeepers quit looking upon swarming as desirable in adding to the number of colonies for the brimstone pit in the fall, they have been struggling with the problem of swarm control, which in some localities is still one of the most difficult problems in honey production. Instead of the old-time thrill of pleasure at the announcement that the bees are swarming, the progressive beekeeper of today hears such an announcement with disgust. It is interesting to note that some of the terms he uses in connection with swarming indicate that he looks upon swarming as an abnormal thing. He speaks of the "swarming fever" and talks about treatment for swarming colonies as though swarming were a disease.

In the fight against swarming, naturally one of the first questions is that of its cause. The back volumes of bee journals are replete with suggested causes of swarming. Thousands of pages have been filled with plans for the prevention of swarming, each plan based largely upon some theory as to the cause of swarming.

Swarming Instinct Sometimes Dormant Through Season.

Since swarming is the natural method of reproduction of colonies, upon which the existence of the species depends in nature, beekeepers are willing to accept this deeply seated reproductive instinct as the fundamental cause of swarming, but they want to know just what it is that calls forth this instinct at certain times and why it is apparently dormant at other times. They know that some colonies go through the season piling up a large surplus of honey, apparently without a thought of swarming; while other colonies in the same apiary waste their energy in swarming; that some seasons practically all colonies go through the season without attempting to swarm, while in other seasons a majority of the colonies try to swarm; and that in some localities, as in some parts of the tropics, well-managed colonies seldom swarm, while in other localities, especially in the far north, swarming is troublesome nearly every year. No wonder that beekeepers have been searching for the thing that throws the switch which leads some colonies headlong into swarming while others continue on the main track of gathering and storing.

Many Things Have Been Put Forth as Cause.

In the search for the thing that throws the switch, some have looked upon swarming as a taint in the blood that might be bred out, and at one time American beekeepers made serious efforts to eliminate swarming by breeding. Some even claimed to have actually accomplished this, but today no one really hopes that a swarm-proof strain of bees will ever be developed. Swarming has, of course, been reduced by the elimination of stock that shows a great

tendency to swarm when there is but little if any excuse for it.

Lack of sufficient room is generally recognized as contributing to the tendency to swarm. As a rule, colonies in large hives swarm less than colonies in small hives. Formerly much was said about colonies of bees established in attics never swarming, because such colonies had the whole attic for a hive. But swarms do issue from colonies housed in attics and other large cavities, and have been known to issue from colonies established under the eaves of buildings, having the whole out-of-doors for a hive. Swarms sometimes issue from the largest of hives, even when tiered up five or six stories high. I have seen swarms issue from two-story hives having 20 combs in which only four or five frames contained brood, the rest of the combs being practically empty and not occupied by the little colony. While large hives and an abundance of room in the form of good empty comb greatly reduce swarming, they do not prevent it in all localities every season.

It has been said that bees swarm because of the honey flow, which makes them feel sufficiently prosperous to divide the colony and build a new home. In the North swarming does usually come during the early honey flow; but in some localities, especially in the South, swarming occurs before the main honey flow, swarms sometimes issuing when the colonies are gathering scarcely enough for a living. In some places swarming ceases entirely on the arrival of the honey flow. While the honey flow often influences swarming, it can not be considered the cause of swarming.

Some thought that the presence of drones causes swarming. Working on this theory Aspinwall, many years ago, constructed wooden combs by drilling holes into the ends of blocks of wood to form the cells in order to have all cells of worker size to prevent the rearing of drones. After years of research along this line he abandoned this theory of the cause of swarming and took up another theory to be mentioned later, which finally resulted in the invention of a non-swarming hive. In this hive instead of eliminating the drones he provided wide spaces between the combs, inserting in these spaces slatted dividers to prevent comb-building in the wide spaces.

Old queens have been put forth as the cause of swarming. Some said that the old queen becomes broody in her second year. Others said that a queen, after laying so many eggs in the spurt of spring brood-rearing, becomes tired and seeks a rest by swarming.

At one time it was believed by many that a queen does not swarm during the first season of her life, and several beekeepers in the North tried to prevent swarming by requeening their colonies in the spring with young queens from the South—only to find that many colonies so treated swarmed, though, of course, they no doubt had less swarming because of the young queens.

Much of the trouble from swarming in colonies having old queens, is no doubt from supersedure during the swarming season when colonies often apparently depart from the original plan of supersedure and swarm because queen-cells are present. In many respects such swarming is quite different from normal swarming.

Influence of Age of Queen Upon Swarming.

Gravenhorst laid down the rule that a colony having a laying queen reared this season will not swarm this season, provided the queen was reared in this colony. If she was reared elsewhere, the colony may swarm this season. But we know that if the old queen is removed at swarming time and all queen-cells (if any) are destroyed, then all queen-cells again destroyed ten days later, a young laying queen from another colony may be given a few days later with the same safety from further swarming as if the young queen had been reared in this colony. The important thing to note here is that when a young queen is reared in this colony this year, there is (except in some cases of supersedure) an interval of at least 16 days during which no eggs are laid. When a similar break in brood-rearing is brought about by removing the queen, it does not make any difference whether the young queen is reared in this colony or elsewhere, so far as swarming is concerned. Even when the old queen is given back to the colony after 16 days, there is usually no further swarming. Apparently the condition of the colony brought about by the period of queenlessness has more to do with the prevention of swarming than the age of the queen.

How Young Bees Contribute to Swarming.

Gerstung, a German investigator, put forth the theory that swarming is brought on by a preponderance of young bees. This fits in well with the well-known fact that the swarming tendency is strongest early in the season when young bees are emerging in greatest numbers. This theory would also explain why colonies are willing to give up swarming when their brood is taken away as in artificial swarming, as well as why the swarming impulse disappears completely about 20 days after removing the queen when the dequeening plan is used to prevent swarming. Using this theory as a basis, comb-honey producers about 20 years ago worked out plans by which the brood and youngest bees were taken from the colony at swarming time, kept in a separate hive until old enough to do field work and then returned to the main colony. Producers of extracted honey, instead of putting the brood and young bees into a separate hive, placed the chamber containing the brood above the queen-excluder, the queen being confined below, thus separating the young and emerging bees from the colony below. In 1908 E. E. Coveyou advised placing the chamber of emerging bees above the supers

to separate them still further from the colony. (See Gleanings, 1908, pages 640-641.) This was further emphasized by A. C. Allen in 1910 (A. B. J., 1910, page 94) and by Chalon Fowls in 1915 (Gleanings, 1915, page 574).

The Aspinwall non-swarming hive was based upon the young-bee theory as the cause of swarming. It provided extra room for these young bees between the combs.

Gerstung, however, carried his theory so far as to attempt to explain swarming as caused by an excess of nurse bees in proportion to the number of larvae to be fed, the unused larval food causing a physiological condition in the nurse bees bringing on the swarming impulse. He evidently quite forgot that when an artificial swarm is made by shaking there are no larvae to feed during the first three days; yet the bees are willing to give up swarming if properly handled, even though these same nurse bees are shaken with the older bees and there should be a much greater excess of larval food than before shaking.

How Field Bees Contribute to Swarming.

In 1916 I had several normal prime swarms from colonies that were made up entirely of bees old enough to work in the fields. This, of course, was unusual. Instead of there being an excess of larval food in these cases there should have been a deficiency, for old bees are supposed to elaborate larval food with difficulty. While a large proportion of young bees, no doubt, contribute to bringing on swarming, they alone evidently are not always the cause.

During the honey flow from clover in 1916 the plants apparently did not begin to yield nectar during the forenoons, since the bees did not go to the fields until about 11 o'clock. During these hot forenoons the field bees remained in the hives, crowded into the space below the frames and pushing upward among the combs, apparently waiting for the signal to rush to the fields. But few, if any, field bees could be found in the supers during the forenoons, but the brood-chambers, especially the lower portion, were literally jammed with these old workers. Just previous to the honey flow the field bees had been confined to their hives by several weeks of almost continuous rain, and when the honey flow finally came they staid at home during the sultry forenoons waiting for the nectar to come. The season was the worst for swarming I have ever seen.

Since that time I have carefully gone over the back volumes of the bee journals for reports of seasons of excessive swarming; and thus far I find that, in every case, excessive swarming was attended by some factor which caused the field bees to stay in the hives during the heat of the day, such as rain or the flowers yielding only a part of the day.

While a large proportion of bees too young for field work is apparently conducive to swarming, if to these is added the great horde of field bees all trying to stay within the already crowded brood-chamber, the congestion and discomfort are too much for even the best-bred bees, which at such times often forget their manners and swarm most unreasonably.

One Factor Always Present in Swarming.

Is it not now time to announce that the cause of swarming has at last been discovered? Fifty years of accumulated experience of beekeepers waging a bitter fight against swarming indicates that one thing is always present in normal swarming, so far as the prime swarm is concerned, whether the hive is large or small, whether the colony is weak or strong, whether the queen is two years old or two weeks old. This one thing that is always present is a congestion of bees within the brood-nest, bringing to the colony a feeling of strength or a need for expansion.

If this congestion is brought about in weak and medium colonies by the colony's confining its work to the brood-chamber, leaving the supers and remote brood-combs vacant and crowding the queen by surrounding the brood-nest with honey, the congestion within this little brood-nest is as real and as potent in bringing on the swarming impulse as though the colony were 20 times as strong. The remedy is stronger colonies or a strain of bees less inclined to crowd the queen in this manner. If the congestion and discomfort are brought about by a lack of ventilation or shade, the remedy is obvious. If the congestion is brought about by a preponderance of young bees which are inclined to stay in the brood-nest too long, the remedy is to invite these youngsters upstairs by giving a set of attractive empty combs immediately above the brood-combs. If the congestion is brought about by field bees staying at home as they often do, even when nectar is plentiful, because the hive is already crowded and uncomfortable, the remedy is to invite more bees upstairs and give more ventilation if needed. How foolish for field bees to stay at home because the hive is not comfortable, when by doing so they only add to the discomfort!

Congestion of the brood-nest is a matter of distribution of the bees rather than numbers, for the hive can be expanded to accommodate all; but the bees must be induced to expand also as the hive is expanded. If most of the bees can be induced to leave the brood-nest, going either into the supers or to the fields, all is well. If the congestion in the brood-nest is caused by field bees staying at home during the heat of the day waiting for the flowers to begin to yield, the problem becomes more difficult; but here again anything that adds to the comfort of the colony should help. Anyway, it is some comfort to know the cause of swarming even though we have not yet learned how to remove it in every case.

SURPRISES IN EXTRACTING

Speed, Time and Temperature Determine the Amount of Honey Left in the Combs

By H. H. Root

WHEN attempting to get accurate figures in regard to the extracting of honey, it is impossible to deny that locality has an important bearing. Figures that represent an average of conditions in one locality many not be accurate for another locality where the honey may be different in density and where other conditions may be greatly changed. Extracted-honey producers can well afford to give some earnest attention to some of the problems of efficiency in extracting. The figures that I present here I hope will serve to bring this matter to the attention of the producers, and will, perhaps, be a surprise to many.

From our Krause apiary of 65 colonies we brought in 157 supers of honey. The combs, most of them, had been recently drawn from full sheets of foundation; therefore, the frames were spaced close. We secured a total of 6,748 pounds of honey, about 43 pounds to the super, or 4.3 pounds to the comb. Next year we shall put in only eight combs in a ten-frame super, so the extractor will take a full super at a load. Our average per colony was about 103 pounds, which was close to the average of our other honey-producing yards. Besides this we saved two full combs per colony for feeding this spring. It must be remembered that Medina County is not a particularly good location for honey. Next year, however, we hope to increase the per colony yield as we shall not need to have so many combs built.

Percentage of Honey in Cappings.

Of the 6748 pounds of honey from this one yard, 5572 pounds came from the extractor, and 1176 pounds from the capping-melter. Therefore, 17.4 per cent of the total amount came from the cappings. Had we spaced wide, this percentage would have been much higher. We got 74 pounds of wax from the cappings; therefore, 1.08 per cent of the total weight of honey and cappings was wax; or, 5.92 per cent of the weight of honey and wax cut off the combs was wax.

In a former article I referred to the fact that E. F. Atwater of Meridian, Idaho, had discovered that even after draining the cappings thoroughly 4 per cent of his original entire crop was left in such cappings. This is a startling percentage, but it must be remembered that the western honey is very thick and that it drains very slowly from cappings. However, be that as it may, Mr. Atwater's figures, based not on a small lot but on an entire crop, convince me that cappings drained until they appear to be nearly dry are, as a matter of fact, very far from being dry.

Efficiency in Extracting.

For the sake of getting accurate statistics on the amount of honey left in the combs after extracting we sacrificed a number of supers of good combs, melting them up after extracting, separating the honey thus secured from the melted combs and carefully comparing the weight of such honey with the weight of the honey originally in the combs. In this way we have obtained some very interesting figures.

Test No. 1.

The first experiment we made was at a temperature of 75 degrees. The eight combs that we selected, including the frames, weighed 50¾ pounds. After uncapping, they weighed 37¾ pounds. After three minutes in the Buckeye extractor, including the time of speeding up and with the extractor turning at 300 revolutions per minute, the eight frames of extracting combs weighed 7¼ pounds. The frames empty, after cutting out the combs, weighed 4 pounds. The cappings and honey cut from the eight combs weighed 13 pounds. The honey in these cappings weighed 12.33 pounds. Therefore the wax in the cappings weighed .77 pounds. The empty combs after extracting and after being cut out of the frames weighed 3.25 pounds. After melting up and separating the honey and wax we had 1.375 pounds of honey and 1.88 pounds of wax.

From the above figures it will be seen that we extracted 30.5 pounds of honey. In the cappings there were 12.33 pounds. After melting up the combs we had 1.375 pounds of honey left. Therefore the total weight of the honey in the eight combs originally was 44.105; 1.375, the weight of the honey left in the combs after extracting, is therefore 3.1 per cent of the total honey originally in the eight combs.

Test No. 2.

This test was made with combs left in a hot room long enough for the honey to reach a temperature of 100 degrees. The extractor speed was 350 revolutions per minute, and the time in the extractor, including the speeding up, was 2½ minutes.

Keeping careful account of all the weights as mentioned in the first experiment, we found that 3½ per cent of the total honey was left in the combs. The increase in temperature to 100 degrees did not, therefore, have quite the effect that we supposed it would. This experiment also shows, if one may judge from one set of combs, that 2½ minutes at 350 revolutions per minute is not quite equal to three full minutes at 300 revolutions per minute. To be on the safe side in our subsequent work throughout the season, we used a speed of 350 revolutions per minute and the time of three minutes.

At a speed of only 250 revolutions per

minute we consider it impossible to extract thick honey, at a temperature of 75 or 80 degrees, in less than four minutes in the extractor, and 5 and even 6 minutes at so low a speed is better. There is no question in my mind but that a speed of 350 revolutions per minute is safe so far as comb breakage is concerned, provided one uses ordinary care in handling the extractor, and that this speed is a great timesaver in the long run. Even at this high speed we do not break new combs, but we usually reverse twice while the reel is speeding up, so that most of the honey is out by the time it reaches full speed. Ordinarily, we reverse only once more, making three reversings in all. For the last reversing we usually use the brake slightly first, although in case of old combs I do not consider this necessary.

How to Tell when Most of the Honey is Out of the Combs.

Our experience has shown that it is not safe to assume that combs are dry just because they look dry. If the angle of the bases of the cells when viewed in a good light appear sharp and distinct, it is reasonably safe to assume that there is not much more than 3 per cent of honey left in the combs. If there is enough honey left in the cells to obscure the base angles so that the bottom of the cell appears round in a good light, it is my belief that 10 to 15 and perhaps 20 per cent of the available honey is left in the combs. It is more difficult to judge the amount of honey left in old combs, because it is harder to see the bottoms of the cells and because the cocoons obscure the angles. A good speed and at least three minutes in a full-speed reversing extractor at 75° to 80° need not leave over 3 per cent of honey in the combs even if the honey is thick. If the honey is thin I am confident that the amount is somewhat less, although our experience with the honey at 100 degrees shows that it is unsafe to take anything for granted.

While it is an exceedingly difficult matter to prove, it is certainly a fallacy to assume that none of the honey left in the cells is wasted. It is true that the bees put new honey on top of honey not entirely extracted, but it is also true that in many instances wet combs put back on the hives excite the bees and cause "gorging." In my opinion, at least one-half of the honey left in the combs is wasted. At the end of the season especially, it is very desirable to have the combs as dry as possible to avoid the nuisance of having the bees clean them out.

I feel that this is a subject we know too little about today, and one that every beekeeper should make a special study of during the coming season. If I am wrong, someone should set me right; there are good beekeepers who take the opposite view, but let us have facts and not fancies.

FIFTY YEARS' EXPERIENCE

What It Has Taught About the Control of Swarming in Comb-Honey Production

By J. E. Crane

IT is of the control of the swarming impulse of which I wish to write rather than the prevention of swarming, and especially in the production of comb honey. It is a comparatively simple matter in producing extracted honey to control swarming, but when we come to comb honey it is quite another story.

The problem can be briefly stated in this way. Here is a yard of 50 or 100 colonies. How can they be kept at work to the best advantage during the honey flow?

I write, supposing we are to visit the yard only once in eight or nine days as we do in the case of our own outyards. Perhaps I can not do better than to invite the reader to go with me as we work; you can look on and receive instruction while I work.

When to Remove all the Brood.

We open the first hive we come to. It is strong and has a vigorous queen reared last year. We notice it is holding up work in supers and on examination find it has queen-cells with larvae three or four days old. There is no mistaking the bees' intentions. We will at once remove their brood-combs, giving dry combs or combs that have some honey in them. If we are short of combs we give two combs and fill out with frames of foundation. If we were to shake them on to all foundation, they might desert the hive in disgust. Now we replace the supers and close up, and go to the next hive. The colony we have treated we expect will give us as much or more section honey, and have the brood-chamber better filled than it would if it had made no preparation for swarming.

What to Do With Removed Brood.

In the next hive we open we find conditions quite different. It is making no preparation for swarming; in fact, we find three combs in the brood-chamber without brood, although it is starting in the supers. We will remove these three broodless combs containing a good deal of honey, and give this colony three good combs of maturing brood in place of its combs of honey. This will build it up so we may expect a good surplus from it.

The next hive we open is a nucleus we started earlier in the season with a choice

queen, removed from a strong colony from which we desired to rear some queen-cells. We will just give it two nice combs of brood that we took from the first hive we opened. We will soon have it strong enough to go into supers.

Another hive is opened. It is doing well; no queen-cells have been started. It is working well in supers. We can do nothing for it but close it up.

Treatment When Queen is Removed.

The next hive we find is one from which the queen was removed eight days ago for rearing queens. All nice queen-cells must be cut out and placed in a nursery and the rest destroyed to prevent swarming. I know many writers say cut out all but one, but I have found that one may lead out a swarm if left. Better leave them queenless for a week longer in the swarming season.

Disposition of Combs of Honey Removed.

The next hive we find like the first one we opened, preparing to swarm, with an abundance of brood, a vigorous queen, young and active. We will remove its brood-combs and give it the combs of honey we have taken from other hives. If there is not enough to fill the brood-chamber, we may insert two or three dry combs or frames of foundation. It does not harm to shake a colony on to combs half or three-fourths full of honey, for, finding little room to store the honey they gather from day to day in the brood-chamber, they will carry it to the supers above and fill them more rapidly.

Treatment When Queen Is Old.

We open another hive. Here we find queen-cells in all stages of development, some with eggs, some larvae, and one or two already sealed. Shall we shake it as we did the last one? I think not. Look! There is a very small amount of brood for so strong a colony. Evidently the queen is failing. Looking at our record we find she is two years old. No; it will be unwise to treat this colony as we did the last. If we should shake it as we did the last one, they might desert the combs we give it, lose their queen and return to the hive queenless and broodless. Or the queen might fill a space as large as the palm of my hand with eggs and then disappear.

We find colonies having old queens much more inclined to swarm than those having young queens or those not over a year old. It is also much more difficult to check their swarming impulse. If we should shake this colony, it may become an unprofitable one; so we will remove the old queen and also all combs from the brood-chamber which contain little or no brood and fill up with good combs of maturing brood taken from a colony we have shaken. The emerging brood will keep this colony strong and at work in supers, although it is queenless. Of course we must cut out all queen-cells likely to mature before we open the hive again, or a young queen may emerge and lead out a swarm and our plans be thwarted.

Strengthening Colonies After Shaking.

We open another hive. This is one, I see, that we shook or whose brood we removed eight days ago. They are doing well. The queen has filled four combs with brood. Work has gone right on in the supers. They have given up all thought of swarming. All new swarms decrease in numbers rapidly, especially if honey comes in slowly, as no young brood is emerging for the first three weeks.

To make up for the loss of these old bees that are dying off, we will remove three or four combs of honey from the brood-chamber of this colony that was shaken from its brood eight days ago and fill up with combs of emerging brood we have removed from some other hive.

As we go over a yard in this way we look after supers, removing those that are filled and giving new ones where they are needed. A good man can go over a yard of 80 to 100 hives in a day if he has a good assistant. At the end of the day he will have few more colonies than at the beginning, but the most of them will be in better condition to gather the nectar flowing from the fields of clover. All colonies made queenless should be given a young queen in about 15 or 16 days. We run in virgin queens at the entrance, with little loss as a rule. Of course all filled supers should be removed and new ones given as needed.

Some years when we have found it necessary to shake a large number of colonies and we have more brood-combs than we can give to other colonies, we have taken a brood-chamber full of them and gone to some colony where the bees were loafing on the outside of the hive and scooped up enough to care for the brood.

Effect of Destroying Queen-cells.

Sometimes we can break up the swarming impulse by simply cutting out queen-cells once in eight or nine days and it answers every purpose; at least a colony will go no farther than to start cells and the queen lay eggs in them. However, for the majority of colonies, when once they have started, strong measures are required to stop them and keep them at work in the supers. Many colonies will do but little in supers after they have larvae in queen-cells, unless honey is very abundant in the fields, and prompt work is required to secure the best results. It does not pay, as a rule, to shake a colony until it is strong in bees, so we often in the fore part of the season cut out queen-cells from weak colonies and wait until the next time we go over them before shaking.

Of course, such a system requires that the queens' wings be clipped before the swarming season sets in. It also requires good judgment on the part of the beemaster.

Sometimes we can check the swarming impulse by removing only two or three combs or frames of brood instead of removing all of the brood (which is better) and replace with dry combs or foundation.

Middlebury, Vermont.

ABSOLUTE SWARM PREVENTION

A Modification of the Demaree Plan Prevents All Swarming and Stimulates Gathering and Storing

The Demaree plan fails, all too often, in its purpose of securing perfect swarm prevention and the largest crop, because the old queen, confined below the excluder, "sulks" and does not lay freely, the colony sometimes even starting queen-cells below and soon swarming, or, it may swarm when virgin queens emerge in the brood placed above the excluder, if the queen-cells are not destroyed. If the queen does not lay freely in her new brood-nest, the number of workers for a later honey flow will fall far below the horde which is necessary to gather a heavy crop. However, where young laying queens in nuclei, on standard frames, are at hand when the flow arrives, far better and more uniform results may be had; and that plan, to cause more dollars to prosper you and yours, is here described.

Preparing for this plan I use a method of securing considerable numbers of fine queens under the natural swarming impulse, during an early flow such as that from fruit bloom.

Other plans of securing young queens may, of course, be used; and when numbers of young layers can be at work in nuclei before the main flow, it is possible to combat swarming far more effectually, where, as here, the orthodox methods do fail too frequently.

Assuming a number of nuclei, each containing one or two combs of brood and bees, with a young laying queen, remove from its stand a strong colony which may or may not be preparing to swarm. In its place put a hive, in the middle of which place a nucleus consisting of one or two frames with some brood and bees, a young laying queen, an empty comb of best quality on at least one side of the little colony, in which the young queen can continue laying, and fill the remaining space with best combs or full sheets of foundation in wired frames.

I usually put an empty comb on each outer side of the hive and then fill the remainder of the space with frames of foundation; the space should be filled in whatever manner is found by experience to give best results under the conditions in other localities.

Now place an excluder on the brood-chamber containing the little nucleus colony. Find and kill the old queen in the colony which you are treating; or, if she is of value, take her out and put her in a nucleus. If in a locality where nights at this time are warm, place one or more supers of empty or partly empty combs just above the excluder, then destroy all queen-cells on the brood and place it in a hive-body or bodies, above the supers of empty comb. If in a locality where nights are cool, place the brood just above the excluder, and the supers of comb above the brood, and save yourself occasional heavy losses of unsealed brood due to the bees partially deserting the old brood-nest, so far from the new queen below, and allowing the brood to chill or suffer from neglect during cool nights or a few days of very cool weather.

In some localities or in some seasons such colonies will not swarm even though young queens emerge above the excluder. Where such is not the case all queen-cells must be destroyed about 10 days later when swarming is over for the season, so far as that colony is concerned. I do not remember that I have ever had a swarm from colonies so treated, so long as they have had room in which to store. The colony by this manipulation is at once placed in the best of condition to gather the crop; and, by the absence of loafing and the free laying of the young queen, there is sure to be a big force of workers to gather a later honey flow.

Briefly, instead of putting a comb of brood, with the old queen, below the excluder, as in the usual Demaree plan and in the various modifications of that plan usually suggested, we put below the excluder a nucleus with a young laying queen, and after removing the old queen from the old brood-chamber, we place this old brood-chamber, either immediately above the excluder, if in a locality having cool nights, or if in a warmer locality, we place above the excluder one or more extracting-supers filled with empty combs, with the brood-chamber with its bees and brood above these empty combs, always first destroying any queen-cells to be found in this old brood-chamber. Later, if increase is desired, this chamber of brood, with its emerging bees, may be set off on a new stand and given a queen. You will not regret giving this improved Demaree plan a thorough trial, for it "delivers the goods." E. F. Atwater.

Meridian, Idaho.

CATALEPTIC QUEENS

How Despondent Queens Commit Suicide(?) Some New Light on an Old Subject

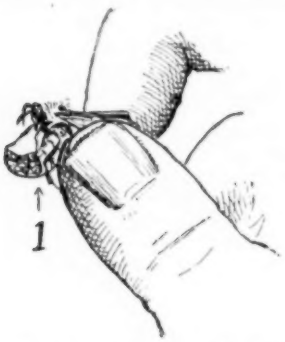
For many years past there have appeared from time to time articles concerning "Cataleptic" queens. They have been described as fainting, having fits, paralysis, epilepsy, catalepsy, heart failure, etc. About 20 years ago I had a queen that threw one of these fits. She lay as though dead for half an

FROM THE FIELD OF EXPERIENCE

hour or more, at which time she came slowly out of it. I placed a drop of honey on her tongue and she revived rapidly, and when placed back in her hive she seemed no worse off for having her "spell." Since that time I have noted many cases similar. Sometimes they recover and sometimes they quiver a short time and die without regaining consciousness. In shipping queens this happened frequently, so that in the course of the season the loss was considerable. This caused me to study the case to see if the cause could be found and a remedy applied. If it were appendicitis, we could operate; if it were something like smallpox, we could vaccinate; or, if it were failing glands, we might graft in monkey glands. Now maybe she ran out of vitamines or by mistake took vitamine "A" when she should have taken vitamine "B." But if it were hardening of the arteries causing high blood pressure, why, nothin' doin'; she would have to die. But before we could administer, we must first diagnose (that word always sounds classy).

I have always been a wee bit skeptical about a queen's having catalepsy, from the fact that queens in their hives sometimes get so scared that they squeal and make a terrible fuss as though they were "plum skeert to death," but under such conditions they never throw fits. A very significant fact was that they always had these fits just after being picked up by the wings. All report this fact.

One day I was watching a queen that had gone into the wrong hive. The bees, as is their custom, were trying to catch her by



Queen with her foot against sting.

the legs, and she was scratching gravel at a great rate. By and by they got her, and in a moment she seemed to take a fit. When I examined her, I found a small part of a worker's sting left in her body. By her actions, I was convinced that these queens that had fits were getting stung in some mysterious manner. I kept a careful watch and some time later I was rewarded by seeing just how the thing was done. As I picked up a queen by the wings, she put out one of her front feet and placed it on the tip of her abdomen, exactly as shown in the cut. The sting was protruding slightly and her foot was over the end of it. Instantly she quivered and lay as though dead. She had stung herself in the foot! The cut was taken from Mell Pritchard's book, "Modern Queen Rearing," and was made to show the manner of picking up a queen in order to clip her, and was not made to illustrate this article. Evidently the artist who drew this picture had seen many queens picked up in this manner, for the picture is exceedingly true to life. The queen in the picture does not seem to realize that she is playing with fire and does not know "it is loaded."

At other times the queen will curl up in such a manner as to place her sting against her bosom about between the fourth and fifth ribs, or at least where they would be if she had them, and in this position the point of her sting protrudes slightly. The mere touch of the sting is sufficient to make the queen deathly sick, and sometimes she gets an overdose and dies. Since that discovery, I have been particular to keep her "biznez end pinted tother way," and have had no more cataleptic queens. Therefore, as far as queens' having catalepsy, why, "they haint no sich animul."

In the April number of the American Bee Journal, Allen Latham writes that catalepsy occurs when the queen has nothing to cling to and that it occurs after she has taken hold of the tip of her abdomen. He also states that the queen acts as though she had been stung by a virgin. So she does, but she accidently stings herself.

Vincennes, Ind. Jay Smith.

SWARM CONTROL

A Veteran Comb Honey Producer Tells How to Do This in the West

Is writing upon this subject any different from a retold story? Yes. When we look back over the past 40 years we see that much has been accomplished in the control of swarming; and while the wreckage of wrong ideas and exploded theories has not been a little, we know we have not yet reached the haven of complete success.

While I believe that we have strains of bees today in which the swarming impulse is much less than 40 years ago, I do not think the time will ever come when the swarming impulse will be eliminated through selection and breeding.

For 25 years I have had both eight and ten frame apiaries, and I do not find the difference in swarming that some report. I am afraid I get the most comb honey from the eight-frame hives. In working for

FROM THE FIELD OF EXPERIENCE

comb honey it is not the kind of hive one uses that controls swarming; it's the kind of honey flow and the way the bees are manipulated to satisfy them.

In this article I can lay down rules only for my own location, for swarming in some locations is much more easily controlled than in others. In all apiaries there is a small per cent of colonies that seem to get in condition to swarm early in the season. Such colonies are allowed to increase, and these splendid natural cells are used for increase or in replacing superannuated queens. This leaves the average-sized colonies to be held until the honey flow without swarming.

It is not necessary here to discuss the different plans of swarm control where one is working for extracted honey, for giving ample room, with a little comb-building to do at all times more than the present needs of the colony up to the honey flow, will do the business. But with comb honey it is different. The beekeeper must have a mental picture of all conditions, must meet the conditions and demands of the brood-nest and not allow that unbalanced condition between the hive bees and the field workers which will soon produce the swarming fever. This can be done by giving the queen ample room, with some combs to draw out, between the supers and the entrance. This will prevent that condition of satisfaction and completeness which bees desire before they swarm.

Now if one feels sure of the approach of his main honey flow, he must reduce his brood-nest to one story and give ample room for surplus-honey storage. Then if the flow comes, swarming will be reduced to the minimum, for there is no condition that prevents swarming more than a good honey flow if it comes just at the climax of the swarming fever.

M. A. Gill.

Hyrum, Utah.

COMB LOVERS AND FIRE WORSHIPPERS

Effective Work Done in Conquering Foul Brood in Wisconsin

Yes, we have foul brood—both kinds—and plenty of it. During the last season I inspected bees in nearly every county in the state, and I found European foul brood in almost every yard visited. This disease is no respecter of soils, as many people seem to think. It seems to be equally destructive in the southern part of the state on the rich limestone soil as in the central sandy counties.

Picture No. 1 shows a yard in western Wisconsin almost 100 per cent destroyed by European foul brood. One of the worst areas in the state last year was part of Brown and Kewanee counties. Many of the infected apiaries were on the limestone ridge extending thru Door, Kewanee, Brown and Calumet counties. In Oconto County the disease was practically universal. There was a decided epidemic in Bayfield County in the extreme northern part of the state.

Fig. 1.—A Wisconsin apiary that was almost completely destroyed by European foul brood.

In every case where the disease caused any trouble and loss, two things were evident, hybrid bees and poor beekeeping. So far as I am able to determine, these are the only two factors to be considered in a discussion of this disease. I believe that European foul brood will eventually destroy all of the black and hybrid bees and put all of the poor beekeepers on the shelf.

Because of the large number of wide-awake, aggressive beekeepers in Wisconsin, we are not much concerned about European foul brood. The presence of the disease is the direct cause of much Italianizing that would not have taken place otherwise. In a sense European foul brood is a blessing. It makes an ordinary beekeeper into a good beekeeper or puts him out of the

FROM THE FIELD OF EXPERIENCE

business. It also discourages the keeping of a colony or so on every farm by careless, inefficient people, which might otherwise become a source of trouble from American foul brood.

American foul brood is being controlled in this state in a very thoro and efficient manner. Our drastic law, which controls the movement of all bees, is working wonderfully to stop the spread of the disease. The inspection force is doing more in the way of destroying infected material than was ever done before. We are practically unanimous in our conviction that the ordinary treatment in the hands of the ordinary beekeeper is a failure. We have not a single case on record where a beekeeper, even the best of them, has been able to eradicate American foul brood from his yard by the "shaking method." I know of many, many cases, among them wise beekeepers, progressive beekeepers, teachers and professors, who have been treating American foul brood in their yards for several years, and not a single one of them has been able to free his yard from the dread disease.

The average beekeeper is a "lover." He loves nature, he loves learning, he loves his bees, but the things he loves the most are the old hives, the old combs and the old paraphernalia which he has made with his own hands. Oh, if we could break up this "love affair" and turn these "comb lovers" into "fire worshipers!" If we could only get them to realize that one "fire" is better than a dozen "shakings;" that in the long run burning is easier, cheaper and surer than shaking. I have found no one able to keep infected material away from his bees. There are no "bee tight" honey-houses. To keep infected material about the place and to keep it away from the bees appears to be an impossibility. I know of no beekeeper who has performed that feat.

Picture No. 2 is a cosy little yard which was found to be about 75 per cent infected with American foul brood. The disease here can be traced, through the movement of bees from the yard of Adam Grimm, who is said to have introduced American foul brood into this state from Italy more than 50 years ago. [Doubtful after 50 years.—Editor.]

While the inspection department has not had sufficient time to demonstrate conclusively the success of the area clean-up method, yet we have entirely freed a number of counties from the disease where there were but few infected yards. In heavy-infected sections where the inspection has been carried on for three successive seasons, the diseased apiaries have been reduced to a very small per cent. The inspection department has stopped the spread of disease into scores of diseased free sections and counties. I have come to the conclusion that the sooner we begin to treat American foul brood as we treat other incurable diseases, the better. No one thinks of treating the foot and mouth disease among cattle, except by the out and out destruction of all infected animals. If we could use that method and destroy all diseased colonies and infected material on the spot, we would soon have this disease under absolute control, from which you may observe that I am a "fire worshipper."

H. L. McMurry.

Madison, Wis.

Fig. 2.—Seventy-five per cent of the colonies in this cozy little apiary were found to have American foul brood.

SIFTINGS

J. E. Crane

GRACE ALLEN, on page 312, May Gleanings, refers to Miss Josephine Morse as a typical "sideliner," and she is right. Not only is she a typical "sideliner," but a typical New England woman. No one, to see her at a beekeepers' meeting, the lady that she is, would suspect the work she can do. The soil of New England is not as fertile as the prairies of the West and the Inter-mountain regions, or the Pacific coast. Our climate is harsh, our winters severe; but it is doubtful whether any other section of our country is better adapted to the production of strong, self-reliant men and women than this same New England. It is not at all surprising that she succeeds where others might fail.

* * *

A. P. Sturtevant, in the article commencing on page 298 on the "Brood Disease Variations," is most enlightening. I frankly confess I have never been able to tell to a certainty, in a small per cent of the cases that have come under my observation, whether it was American or European foul brood. After carefully studying his article one ought to be pretty sure of his diagnosis.

* * *

A colored man is said to have been building a fire with wet wood, and when called away for a little he returned to find his fire had gone out. He remarked with all the cheerfulness of his race, "Bless de Lor', if de fire has gone out de wood is left." So we beekeepers may keep cheerful if we find a few colonies in spring dead from queenlessness or other causes. We may yet be thankful that the hives, combs and more or less honey are left, with which to help other colonies or to make new ones when honey is plentiful.

* * *

That up-to-date article by H. H. Root on extracting honey on a large scale, commencing on page, 302, is certainly interesting. While most of us do not do business on so large a scale, we may get some items of information that will be helpful. I was especially interested in the corrugated bottom of a capping-melter. The great objection to these melters has always been that the heat injures the quality of the honey. If the honey could be separated from the wax as soon as melted, it would help; but the honey rests on the hot pan and is prevented from running off quickly by the wax, unless the pan is hot enough to melt the wax as soon as it strikes the pan. While studying this problem a year ago I came to the conclusion that a corrugated bottom would help matters. I constructed a small model and found it to work well. The honey and wax as soon as melted would drop to the bottom of the corrugations and run off, while the wax unmelted would remain on the ridge until melted. I believe it a decided improvement on the flat-bottom melting pan and hope it may come into general use.

* * *

I am pleased to notice what J. L. Byer has to say, on page 318, about the loss of a half dozen colonies from queenlessness. It is the order of the day to say that every hive should be supplied with a young queen in the late summer or early fall, that every colony should be brought to its greatest productiveness. This is possible where one has a small yard of 20 to 30 or even 50 colonies, but when one has 500 or 1000 colonies, scattered through a half-dozen towns, it is not an easy matter. The supreme question then is, how may we secure the best or largest results from the time we have to spend with our bees? We often have to leave a good many things for the bees to do, and the superseding of queens is often one of them.

* * *

On page 309, under "Siftings," the statement was made that little was known of the value of insects in the fertilization of our fruits before 25 years ago. As I had depended upon memory, I wrote to the Agricultural Department at Washington to know the exact date when the value of insects in the fertilization of our cultivated fruits was discovered, and I have received a long letter from Prof. M. B. Waite, saying that the experiments that decided the question were made mostly in the spring of 1892, 30 years ago. I wish I had room to quote at length from his interesting letter on his painstaking experiments to discover the value and even necessity of insects in the production of pears and apples. Of course their value in the cross-fertilization of many plants was known many years before, and a most interesting account was given by Darwin some 60 years ago.

* * *

The following is sometimes a good way to take care of swarming for those who wish to take their work a little easier and can spend their entire time in one yard and do not take the trouble to clip the queen's wings: Whenever a swarm issues hive it in an empty hive and set it close to the entrance of the hive from which it issued. In three or four days shake it out, just at night, and let it run into the hive from which it came, and swarming is over for the present. I treated O. O. Poppleton's yard in South Florida in this way and it worked well, but he used large hives and ran for extracted honey.

IN A RENTED KITCHEN

CONSTANCE ROOT BOYDEN
(Stancy Puerden)

WHEN two families live together in a rented, furnished house for some five months two things are sure to occur—both housekeepers will be jolted out of some of their housekeeping ruts, and each of them will anticipate with joy the prospect of her very own home, especially her own kitchen. And this is said with no intention of disparaging either family or the pleasant, homelike, rented house.

The house in which we have been living since early in January has large, airy and sunshiny rooms with plenty of books, easy chairs and cushioned window seats, large halls, adequate closet space, bathrooms, porches and a beautiful yard with orange trees, deciduous fruits, rose-covered pergolas and flowers. The men and girls loved it on sight, and if our two boys had been here they would have loved it. We two housekeepers loved it too—at times. But there were times when the care of it seemed so burdensome that we became almost as depressed as a beekeeper when the sun refuses to shine during the honey flow.

The part of the house which we do not love at all is the kitchen in spite of the fact that we both enjoy cooking. While it is not a pretty, modern, white kitchen it has plenty of cupboard space, a large window, framing a beautiful view, over the sink and is equipped with a good gas range, plenty of utensils and conveniences and well stocked with linen. But (and it is an insuperable but) in order to get to the dining room one has to go through a door in the side of the kitchen next the sink, traverse a long serving pantry and go through a swing door into the dining room. Or one can choose another route through a door in the opposite side of the kitchen near the gas range on through the hall and living room and through double doors into the dining room. (I am not sure whether one goes through a door or a doorway, the house being dictionaryless, but I'll let it stand, for there have been many times when I have been impatient enough to go through the 2-inch doors themselves.) The distance from the kitchen to the dining room table is about the same by either route. Never, never again will either of us live in a house which hasn't a door leading direct from the kitchen to the dining room, not even if our husbands should become rich and we should keep several servants apiece. I think it would be difficult to keep them under such circumstances.

The partition between the kitchen and dining room is taken up with a wide and convenient sideboard with china closets, flanked by a storage closet on either end, one of which opens into the dining room and the other into the kitchen. The space between the two closets, on the kitchen side of the partition, is filled in with cupboards, open shelves and drawers, with an open workshelf at table height balancing a similar shelf on the dining room side. In the center of this is a small door, hinged at the top, through which food and dishes may be passed into the dining room, but because of the cupboards on the kitchen side and the china closets on the dining room side the passage is long, and I rather sympathize with one of my nieces who sometimes slangily requests, "Shoot me the glasses" when she is preparing to wash dishes.

The distance from here to the office, to which the men of the temporarily double family have to drive every day, is twelve miles, and they have three favorite routes, Huntington Drive, Valley Boulevard and Coyote Pass. Coyote Pass is supposed to furnish the draft from the ocean which delightfully tempers the climate adjacent to it. For that reason when the housekeeper who sits at the end of the table near the sideboard felt a draft on the back of her neck she christened the pass cupboard "Coyote Pass," and now we always allude to it that way and try to remember to close "Coyote Pass" when everything essential to a meal has been put through. And the route to the dining room through the hall and living room has become "Huntington Drive," while the serving pantry route is "Valley Boulevard." The latter also leads to a breakfast room, but as it was rather small for our number and quite as far from the kitchen as the dining room we never used it for that purpose.

WHEN we took this house we were glad to find it apparently well equipped with clocks. There was a good-looking mantel clock in the living room, a pretty little wall clock in the dining room, a stately and beautiful old clock, which would not run, in the library, and a large, old-fashioned pendulum clock hanging on the kitchen wall. We thought it quite fine to have a kitchen clock which struck with a sonorous tone. But whether the Ohio invasion or the January freeze hoodooed those clocks we have never determined; but soon after we moved in they struck, not as good clocks should, but like the miners on April 1. The dining room clock just laid down its tools without notice; the living room clock had a bad case of heart trouble and skipped ticks in a distressing way for several days before it too stopped work; the hour hand on the kitchen clock decided to take a rest at six,

although the minute hand kept at work, and regardless of how often we coaxed the hour hand back on its job it would drop back to six the minute we turned our backs.

Our landlord came to our assistance, did a few mysterious things to them and then started all the clocks, having wedged some blotting paper back of the hour hand of the one in the kitchen. The clocks ticked regularly and reassuringly until he was out of sight and then each refused to work in its own peculiar way. We have long since given up argument with the dining room clock, but the living room clock is so willing that we still have hopes of it. It will generally run cheerfully for several hours after it has been persuasively tilted, and therefore on those days when someone has time to start it frequently we hear its companionable though intermittent tick. If urged a little at bedtime it has been known to run all night long, cheering the chance insomnia sufferer by telling her the approximate hour. Its striking is a little inaccurate.

For weeks the kitchen clock was absolutely reliable to this extent—we could always tell the time if we could remember the hour, for the minute hand kept almost perfect time. But sometimes we forgot to wind our watches or left them upstairs, forgot the hour and had to guess at it, with the result that the painfully punctual one of the two housekeepers arrived at church one Sunday morning when the service was three-fourths over.

BUT in spite of "Coyote Pass," obstinate clocks and a few other little drawbacks added to homesick pangs for the dear old homes in Ohio, we have had plenty of fun in the rented kitchen and the work has gone off much more smoothly and easily than we thought possible at first. The three girls and the two mothers have learned to do teamwork in preparing meals and washing dishes, one of the fathers has proved himself quite a chef in getting breakfasts while the two housekeepers were dressing and putting up school lunches, and we housekeepers have learned not a few things from each other. When we separate in June and go into the homes which we have bought I suspect the girls will be more or less lonely, the housekeepers will miss each other's intelligent assistance and the breakfast chef may miss his own coffee, which he now boils to his heart's content.

The following are some of the recipes which we found to be practical for the double family, ranging from eight to ten at various times:

Mutton Stew with Dumplings.

2 lbs. forequarter mutton	1 teaspoon Worcestershire sauce
3 onions, sliced	2 cloves
3 carrots, diced	Salt to taste
4 turnips, diced	Flour
1 tablespoon vinegar	

Cut the meat in pieces suitable for serving, add the vegetables and cover the whole with cold water, bring to a boil, skim, cover closely and simmer until the meat is tender. When done, season, thicken the broth slightly with a little flour stirred smooth with cold water, bring to a boil again on a stove mat, drop the dumpings over it and cook, covered closely 12 minutes. Do not lift the cover until done. Serve the dumplings on a hot platter with the stew around them.

Dumplings for Stew.

2 cups sifted flour	1 egg
4 teaspoons baking powder	1 teaspoon salt
	1 teaspoon margarin
Milk	

Sift the dry ingredients together, cut in the margarin and add the egg mixed with enough milk to make a stiff, drop batter. Drop by the teaspoonful over the boiling stew and cook as directed above. The egg may be mixed with a little milk and more added to the batter if needed.

Lightning Cocoa.

½ cup cocoa	1 teaspoon vanilla
½ cup sugar	¼ teaspoon salt
1 qt. milk	1 qt. water

Put the milk and water in a kettle over the fire, mix the sugar, cocoa and salt thoroughly and sprinkle over the top of the milk and water mixture. Bring it to a boil, flavor with the vanilla and serve with cream and more sugar, if desired.

Stewed Rhubarb.

2 lbs. strawberry rhubarb, cut small	1 cup granulated sugar
	2 slices of orange
	½ cup water

Put all the ingredients in an enameled saucepan, cover closely, set on an asbestos mat over the fire with the burner rather low and cook slowly until each piece of rhubarb is tender but whole and the juice red and clear. If the oven is in use for something else the rhubarb may be baked.

Scalloped Potatoes with Pork and Lamb Chops.

Potatoes	Pork chops
Milk	Lamb chops
Flour	Salt and pepper

Peel and slice the potatoes and arrange in layers in a shallow pan, dredging each layer lightly with flour. Season with pepper and salt and pour in milk until it can be seen between the potatoes. A little onion may be added, if liked. Arrange the pork and lamb chops over the potatoes and bake about two hours in a moderate oven. All pork chops may be used or all lamb. If no pork is used and the lamb is very lean, a little butter should be used to season the potatoes. It is well to turn the chops when about half done.

Oven Fried Mush.

1 qt. cornmeal	3 teaspoons salt
3 qts. boiling water	

Pour the boiling water slowly over the cornmeal in a large kettle, stirring carefully to prevent lumping. Put over the fire until it thickens and boils hard (in little volcanoes) when the kettle should be placed on a rack in a larger one, the inner kettle covered closely, and cooked for an hour or more. If you have no rack the covers to baking powder cans or coffee cans will serve to raise the inner kettle enough to prevent burning. When done dip the mush into two bread pans which have been rinsed in cold water, and set aside until cold and firm. Slice the mush and place the slices in well-greased shallow pans (cooky sheets, if you have them), spread them liberally with fresh bacon or sausage fat and bake an hour in a hot oven. The prepared mush may be placed in the oven the night before. Then the housekeeper can slip down to the kitchen, light the oven burners and go back for a little nap before dressing. Serve with honey.

Apricot Marmalade.

2 lbs. dried apricots	1 can shredded pineapple
Sugar, honey or both	

Carefully wash and soak the apricots overnight. In the morning put them through a food chopper and together with the water in which they were soaked mix them with the can of shredded pineapple. Measure the fruit and for every quart of fruit add three cups of sugar, honey or a mixture of the two in any proportion desired. Put over the fire and cook a short time until thick, taking great care to prevent scorching. This does not jelly but a very few minutes cooking will result in a thick spread for bread.

All measurements level.

XUM

Beekeeping as a Side Line

Grace Allen

ONE thing that I have been doing the last two springs more thoroughly than ever before is classifying combs. Before putting supers on the hives, I look them over comb by comb. Into one quickly scraped super go all the good combs, into another the second grade, and so on. Then I mark them—that's the new part. A little can of red paint sits on the worktable, and when a super is filled with first-grade combs, I paint a straight red line across the middle of the top-bars, thus marking not only the full super but also each comb in case they should get separated. These are straight, wired combs, with practically all-worker cells, and may be used at any time as part of the brood-chamber. It is particularly important to have only such good combs in the first super put on in the spring, as I usually let it be part of the brood-chamber. The shallow that was on all winter is almost certain to be filled with brood in the early spring. So that one is put above an excluder, and a new one given to the queen, in addition to her full-depth brood-chamber. So I must have only good combs.

The No. 2 combs, collected into another super, are marked with two red stripes. These are combs that may be used in the brood-chamber if necessary, but not until all the No. 1's are used. They are not bad, but are not so good as we like. Then those that have too much drone comb to be used for brood are marked with three red lines and are to be used only above the excluder, unless the drone comb is cut out and successfully replaced with worker comb. Any that get four red marks are to be cut out—later in the season, when there is no chance of their being pressed into service through some unexpected rush of nectar. These particularly bad combs, I hasten to explain, came into our yard largely—though not entirely—through purchase.

By leaving, so far as possible, only marked combs on the hives in the fall, one could gradually grade and mark all his combs. Such work, of course, is never really finished, for the season's use may make a difference with some combs—as we found this spring from moth and mold. But reclassifying then will be a small matter. Within another year or two we hope to have all the full-depth combs graded likewise; only a small number of them are done so far. The paint marks will gradually wear off, but they will have served us through this period of weeding out and classifying. Or they can easily be renewed, if it seems worth while.

Have you moved your bees? So asks every one who knows that we have moved ourselves. Except for taking the few colonies from West Nashville out to the country yard, we have left the bees undisturbed. They are fairly convenient, scarcely a mile away, and are well established in the yard we have so much enjoyed for two years. Perhaps some day we will move them, but for the present they are still there by the cherry orchard, with the hills beyond.

We were somewhat late getting at our spring work this year. On April 15 we started looking through the hives—a Saturday that closed with a sunset like the jasper and sapphire and flaming jewels visioned from the Isle of Patmos—like uplifted doors through which the very King of Glory might come in. And the next morning was Easter.

The result of our first examination makes us affirm most emphatically that beekeepers might well modify the dictum at present so popular, that you cannot leave too much honey with the bees in the fall. Possibly not, but you better examine them early the next spring. Because they have plenty of stores, don't think you can take your own time about your spring examination. The fact of having so much may be the very reason you must not delay. It doesn't hurt the bees to have a lot more than they will need, if they are not cramped for room; but it may be very inconvenient for the beekeeper, if, for any reason, he is prevented from making an early examination. Particularly when there is an early spring. A lot too much honey on the hives during winter calls for an early examination almost as emphatically as not quite enough honey does. (Only perhaps not quite so early.) The not-quite-enough may suffice if the spring comes early, but it calls for prompt and conscientious watching if spring is late. The lot-too-much, on the other hand, may be all right if winter hangs on late, but it requires prompt and conscientious watching if spring comes early—lest hives become crowded and queen honey-bound. Most of our own hives we found pretty crowded when we examined them in mid-April, though they had wintered, most of them, in story and a half hives, and the rest in two stories. Of course we wanted that brood, but because of so much old sealed honey in the hives, they really needed room a little earlier. Fruit trees had bloomed early, though not with particularly favorable weather right here.

But the great surprise of the season was the unusually early and enthusiastic blooming of the black locust. On April 14 we saw the first of it, and for the next few days more and more generously the beautiful white pendant blossoms were flung out

to the already fragrant air, until the entire countryside was transformed with the beauty of them and heavy with their sweetness. On every side of our little country bungalow we could see them like fountains of white against the new tender green of other trees. Across the hill to the south they stretched like a band of unmelted snow.

This period of black locust bloom is all too often one of cold rains and general bad weather. It was cold this year—so cold that the bees accomplished little really vigorous, roaring work except from about 11:00 to 3:00. Yet while this low temperature may have distressed apiarian hearts, still the days, one after another in their breathless succession, were fair and bright and tingling. And with the world so beautiful around us, shall we let ourselves measure our delight in it only by the treasure brought to our hives? Or shall we count over with gusto the treasures folded away within our hearts for our eternal keeping?

There have been—of course—other discouraging things, too. There always are. In the honey-house, moths got into our stacked supers, some of which we had taken from the hives so late last fall that we had persuaded ourselves (for the last time, be assured) that all danger of moth was passed. Many good combs were found badly injured by these pests. How quickly one dose of carbon bisulphide killed them and put a stop to their unkind activities. There were other combs showing cells of spoiled pollen; others with cells of bubbly honey, evidently soured.

In the yard, several hives had combs with great discouraging holes where the bees had gnawed away places too moldy to clean up. One hive was queenless. Another had a large part of the otherwise nice worker-comb all knobby and distorted with the disastrous signs of a failing queen, drone brood in worker-cells. In this hive there were sealed queen-cells and also one that showed recent emergence of the queen. Surely the only way in which bees in such circumstances could get a normal queen, unassisted, would be by having started to rear one before the old queen completely failed to produce fertilized eggs. This particular young queen, of which we caught a glimpse a few days later, looked like any other.

In one hive an old bottom-board had rotted partially away, and up through the open space thus afforded had come a colony of white ants, the first ones I can remember ever seeing. The floor of the hive was heaped with fine earth, and upwards to the very top of each of two full-depth combs stretched—what shall I call them?—sort of dirt roads or passages, reaching to a corner of the hive where there was a very City of Ants, or at any rate a very popular and populous suburb. We gave the bees a new bottom-board and brood-chamber, scraped the hard-caked mud from the combs and poured gasoline into the hole in the ground that looked like ant headquarters. Several times, as usual, in the warm snug place between the inner and outer covers, we found black ants. And as usual we sprinkled liberally with borax, which has never yet failed to drive them off. Chilled brood was being dumped out on several doorsteps.

But what of it?—what of all these awkward, inconvenient, disappointing and unprofitable things? We could not care deeply. Mocking birds were singing and black locust was in bloom and beauty laid her magic on the hills.

Then, too, there was a mystery. Every beeyard has at least one mystery a year. Just as I reached the yard one noon I saw a swarm in the air near a hive not yet examined. At first glance I thought it was coming out, but the next instant discovered that it was entering the hive, the front of which was a solid curtain of bees. Clipped queen, I thought with satisfaction. The return of the swarm being so far accomplished, I merely sat down on the hive and watched the entrance idly—scarcely hoping to see the queen come in. But I did see her—and she was not clipped. On opening the hive a few hours later, I found queen-cups with only eggs in them. I clipped the queen, put her on a frame of brood with nine empty combs in a new brood-chamber, with a queen-excluder and the old brood-chamber above. There they still are, apparently content. O you who are wiser than I, why, having swarmed with an unclipped queen, did they come back?

By the cherry orchard with the hills beyond.

FROM NORTH, EAST, WEST AND SOUTH

In Southern California.—The season is conservatively estimated at from two weeks to one month late. Perhaps one month is very nearly right. The sages began yielding a little nectar about April 20, and the oranges at about the same time. But the flow was so slight until about May 1 that only the very strong colonies were able to get even enough nectar to live on. The lighter colonies had to be fed. About May 1 both the black sage and the oranges began yielding quite freely until now (May 5) considerable surplus is being stored. Where the locations are favorably situated on warm south hillsides, the black sage seems to be yielding more plentifully than the average orange.

Occasionally in a season like the present the orange trees bloom much earlier on the south side of the tree than on the north side. This always presages a much longer blooming period. A very warm north wind for a few days brought the bloom out quite rapidly, but again the weather changed and cold cloudy days prevailed for about 10 days. So much cold weather made the colonies very backward about going into the supers and caused the uneasiness that often brings on the desire to draw queen-cells and to swarm. Practically all of the old honey was consumed, and many beekeepers fed sugar to keep up the morale of the colony.

One is surprised, when traveling around, at the number of beekeepers that have "sprung up" within the past three or four years, who have from 50 to 150 colonies. Just what effect this will have on the future of the industry is hard to conjecture. Selfish is he who wants a good thing all to himself; but if a business is overdone in a certain locality in any line so that even the man long established there cannot make a living, all are injured, no one benefited and the business often almost ruined.

If the beekeeper would keep posted and know what he should get for his honey, when a buyer came along, he could say: "My honey is worth so much. If you want it, all right; if not, all right." When no attention is paid to markets and when bee journals at one dollar per year are too expensive, so long will the beekeeper lose enough on his honey sales each year to keep in the role of paying the other fellow's office rent and for the other fellow's good times—instead of spending the money for his own home comforts.

Co-operation and the exchange ideas are all right, but there seems to be a lack of ability among beekeepers to grasp properly the fundamentals necessary to carry the honey sales business to the success it rightly deserves. When the organization gets beyond a certain number of members or a given locality, it gets unwieldly and beyond the control of the average man engaged in the production of honey.

In other words, the producers of honey, generally speaking, have not the business ability to manage satisfactorily the marketing of a million dollars worth of honey. The unfortunate ending to three years of effort in the California Honey Producers' Co-operative Exchange proves that the handling of large crops of any kind calls for men long educated or skilled in marketing.

The Exchange was organized at a time of extremely high prices on honey, and the reconstruction period immediately after the war tried many a business and has proven disastrous to our Exchange. In many cases more money was advanced to the producer than the honey sold for. Consequently, it will be necessary for Mr. Beekeeper to make good by returning the over-advance which he received.

This, of course, makes an unfortunate condition, as most men spend all they get and will have to provide some way of raising the money. A few are dissatisfied and at present refuse to pay, but the great majority are fair-minded and will meet what they consider a just obligation. Notwithstanding all of the discouragements, between 30 and 50 per cent were willing to join the reorganized Exchange. Just what the outcome will eventually be, the writer is at present unable to state. Suffice it to say, the beekeepers have learned many valuable lessons during the past few years and will in the future be much better able to judge the prices they should rightfully receive for their products. L. L. Andrews.

Corona, Calif.

* * *

In Northern California.—From all parts of our section have come reports that the past winter and spring were the coldest ever experienced. Heavy frosts throughout April were frequent, and winter and spring losses were heavier than usual. In a few restricted localities they were as high as 50 per cent to 70 per cent. Contributory factors towards this high death rate were lack of a sufficient amount of young bees reared last fall, lack of sufficient stores and insufficient protection. In the past too little attention has been paid to the above important considerations. Usually most of our localities have a fair fall flow and, in the past, nature has taken care of the winter's supply of young bees. Last summer, however, we experienced a severe hot spell, and, as a result, the fall plants secreted but little nectar. Thus, many colonies were compelled to enter into an unusual winter and spring, lacking their usual quota of fall-bred bees. Many colonies passed away from the above cause, and others from a shortage of stores. Sheltered or protected colonies fared better than

FROM NORTH, EAST, WEST AND SOUTH

those exposed to the inclemency of the weather. The broodless period had been longer than usual, and most of the losses occurred during the building-up period in March. During this month there was an actual shortage of pollen along certain sections of our coastal region. Several hundred colonies were forced to give up breeding, and subsequently died. There was plenty of honey but not a cell of pollen in the hives. Depleted apiaries are still fresh in the minds of some of us, and we should analyze the causes thereof so that when fall arrives we may avoid future losses. The essentials to bear in mind are a young queen, a fall flow or feeding, stores and protection.

There have been no alarming reports of brood diseases. European foul brood especially seems to be on the wane with reports of infection ranging not higher than five per cent. Better beekeeping is making itself felt, and our county inspectors everywhere are working very energetically to reduce American foul brood. Inyo, Madera, Monterey, Napa and Solano county inspectors report that their spring cleaning is well under way.

It is rather difficult to judge the season's prospects. It will be a season that will commence nearly one month late in most sections. To date the rainfall is below normal, and during March there was an unusual amount of cold dry winds. The year ought to bring nearly an average crop. Outside of the irrigated districts some rain during May would help more than any other one factor to insure a most excellent crop.

Big Sur, Calif. M. C. Richter.

* * *

In Oregon— After a very much prolonged and cool spring, the bees are beginning to build up rapidly. The Oregon maple which came into bloom on March 20 last year started yielding nectar one month later this year, being followed immediately by fruit bloom and dandelion. With this abundance of nectar in the field, and with fairly continuous good weather for the past two weeks the bees are regaining much which was lost. However, in many localities the winter loss will run from 10 to 20 per cent, and in some individual cases much higher. Much of this loss was due to starvation during February and March. During this time European foul brood got a start, but is now being more or less held under check and under proper care cleaned up by the bees.

There seems to be a growing demand among fruit-growers for bees for pollination. Most of the fruit men are renting bees rather than buying. The prevailing rental price is from $3.00 to $5.00 per colony.

The local supply of honey has been practically cleaned up for some time, and retail prices remain approximately the same.

Corvallis, Ore. H. A. Scullen.

* * *

In West Virginia.— The swarming season began in earnest the first part of May, which is about one month earlier than usual in this country, taking everybody by surprise. Bees did exceedingly well during the month of April. The brood-nests were crowded with honey and brood unexpectedly to the beekeepers, which fact caused the heavy swarming. I visited one beekeeper who had taken advantage of the season and put on his supers early in April, and on April 27 he told me that the bees were capping the first super. This is out of the ordinary in this country, as we do not expect any surplus until about May 10.

Bees in general are in good condition for a honey crop, and the floral prospects are good. This refers to modern beekeepers, as last year was a hard year in many parts of the state and the old box-gum beekeepers were almost wiped off the map. Winter stores were light and practically no feeding was done. I know one man who had seven old box hives and got through the winter with three, two of which were very weak. I also heard of others who lost practically all theirs. We have many beemen in this state who still cling to the old way, partly because they have not as much as heard of the standard hives equipped with movable frames. I myself read my first article on bees in the year 1920, not because I was not interested but because I had not heard of Gleanings in Bee Culture. Since that time I have read every thing on bees I could find. The public needs more education on the bee industry. I would suggest this be brought about through our county agents, who could talk face to face with people that would be glad to subscribe for Gleanings.

Kenova, W. Va. L. Perry.

* * *

In Indiana.— Bees in northwestern Indiana came through the winter in excellent condition except that a much larger proportion than usual were short of stores, and many losses resulted from starvation. The shortage of food was probably due to two causes: first, warm weather in September brought about late brood-rearing which forced a larger proportion of honey into the supers; and secondly, a larger amount of stores was consumed, owing to comparatively warm weather later in the season.

With an abundance of rainfall, both last fall and through March and April, clovers are in fine condition. Fruit bloom and dandelion were never more plentiful and, since the opening of these blossoms, the weather

FROM NORTH, EAST, WEST AND SOUTH

has been fine every day, so that many colonis are now (May 7) working in the supers. Nevertheless, it is extremely difficult to forecast a honey crop.

American foul brood is becoming quite prevalent in this locality and is causing a considerable loss. European foul brood, which practically wiped out many large apiaries about 15 years ago, has practically disappeared. This disease is no longer considered a menace since we have learned how to handle it. Judging from some of the recent articles in Gleanings, it would seem that there are even yet some beemen who haven't learned the trick. For their benefit let us repeat: Strong colonies, Italian stock, prompt treatment. Don't wait till the colony becomes rotten with disease but go through the hives every two weeks and treat at once when discovered. A practical mode of treatment is this: Kill the queen, in 10 days destroy queen-cells and unite with a strong colony, preferably Italian, by placing the diseased colony on top over a queen-excluder and sheet of newspaper. I have used this treatment with hundreds of colonies and European has been entirely eliminated. But, say, don't try this plan with American foul brood. E. S. Miller.

Valparaiso, Ind.

* * *

In Wisconsin.—May the third, and the season so far is normal with the average season. Clover is in normal condition in our immediate vicinity. Outdoor-wintered bees wintered perfectly and better than cellar-wintered bees. The outdoor-wintered colonies are very much in advance of the cellar colonies. Prospects for a crop are normal here at this time.

We have 250 colonies in modified Long Idea hives, 20 Langstroth frames in one hive-body, permitting the use of ten-frame supers side by side above these lower 20-frame bodies. These hives are packed all the year around, excepting the supers when they are on the hives.

Previous to this time (June) we have examined our colonies once in April, general condition, bees, queen, amount of brood and honey being recorded. Normal colonies that have five or more frames of brood and four or more frames solid full of honey at this time (end of April) need no more attention until fruit bloom when a super is given, as they are likely to have 10 or more frames of brood by that time and of course the 20-frame hive full of bees. More supers are added in June before the honey flow. At the beginning of the honey flow all colonies and every frame of brood are carefully examined for American foul brood. We have not had any for nine years, but all this time it has been a few miles away.

We are not obliged to do anything whatever in or with the brood-chamber to prevent or control swarming. We do shift supers and add supers according to the needs of the colonies. That is all the colony work we do during the honey flow. We have less than 5% of natural swarms per season. Our cellar-wintered bees are in ten-frame Langstroth hives, and we and most other beekeepers here practice a mild form of the Demaree plan for swarm control; allow the queen two brood-chambers until the clover flow, then keep the queen in the lower chamber with three or four frames of mostly unsealed brood; the balance of the brood is placed in supers above a queen-excluder. A few frames of brood are placed in the center of each super, so that a line of brood-combs will extend from the bottom of the hive to the top of it without a break. This system does not shock the colonies and cause a setback as it might with a complete break of brood between supers and taking too much away from the queen below at one time. However, it seems to be necessary to remove more frames of brood from the brood-chamber again every week to 10 days and raise them above the excluder. On a small tryout we had no swarming by simply allowing the queen two 10-frame brood-chambers, one above the other, and adding the supers above. We think that this would not prove reliable every year.

Greenville, Wis. Edw. Hassinger, Jr.

* * *

In New York.—Bees have wintered exceedingly well and built up rapidly during April where they were supplied with sufficient stores; but, on account of such heavy brood-rearing during April, many colonies will be short of stores and will have to economize during May unless supplied by feeding or a good flow from fruit blossoms or dandelions. For this reason they may not come into the clover honey flow in June in as good condition as they should.

Owing to last summer's severe drouth clover was thin and small last fall. Early spring rains helped it considerably and it was looking quite promising until the very cold spell came on the last week of April, with the mercury dropping to 16 degrees. In some places this was accompanied by dry weather and a northwest wind. Clover now has a dry, withered appearance and does not look very promising. We do not believe that clover throughout the west end of the state promises a 50 per cent crop on an average with no prospects at all in some localities. However in many seasons fair yields of honey are secured from rather thin stands of clover, for usually the thin stands are left to thicken up with other grasses before being cut, affording the bees a longer period for working it. It is therefore always advisable to be prepared with

FROM NORTH, EAST, WEST AND SOUTH

plenty of supers for a bumper crop, even though we may not expect to use them.

New York is again to be favored with a real live extension specialist in beekeeping in the person of Prof. R. B. Willson, who will take up the work about June 1. Mr. Willson is a native of New York, a graduate of the College of Agriculture of Cornell University, of the class of 1917, and for the past several years has been beekeeping specialist in Mississippi. New York has been without a beekeeping specialist since Prof. Rea resigned several months ago.

Prospects for a fruit crop are exceedingly good for everything except Baldwin apples. H. M. Myers.

Ransomville, N. Y.

* * *

In Alabama.—The weather to May 1 has been very good for queen-rearing and package-shipping, and most of the bees have built up well but at the expense of the stores. Colonies have been living for weeks on what they could gather and a few days of bad weather would bring on starvation, although they were left an unusual amount of stores in the fall.

In the black belt of Alabama and Mississippi the main honey flow is on before June 1, and all danger of swarming is over. The main work of the beekeeper at this time is to see that all colonies have plenty of room to take care of the crop.

If the crop is good there will be many beekeepers who failed to put up the necessary supplies last fall. These will send rush orders to the supply dealer so that he will be swamped with orders, and they will have a chance to kick about the service.

Several beekeepers of this vicinity enjoyed a treat on April 29, when A. I. Root visited Montgomery and talked to them of his early trials and experiences. E. R. Root also talked on some important topics of the day. J. M. Cutts.

Montgomery, Ala.

* * *

In Ontario. Following a March unusually fine, we have had an April here in Ontario that has been very trying indeed for the bees. Here in our locality bees carried pollen only four or five days during the whole month, and freezing nights were invariably followed by cold raw days. When the sun was shining, some bees would venture out, and in many cases they went never to return.

Thanks to fair wintering they have held their own better than some years, but I think it is safe to say that the bees, generally speaking, are not in nearly as good condition as they were a month ago. I am almost ashamed to say that in three of our apiaries about 10% of the colonies are short of stores and, as I have often stated, I regard spring feeding as a sort of nightmare. These three apiaries had a continuous light flow during all of last August, and the bees went into winter quarters altogether too populous and seemingly started early brood-rearing and used up their stores. All of these light colonies are in 8-frame Jumbo and 10-frame Langstroth hives. The 8-frame Langstroth hives in the other apiaries are all right, and the 10-frame Jumbos also have enough stores. Of course the smaller hives were made "solid" with stores last fall, while the larger hives that are now short seemingly did not get quite enough. Needless to tell you, we have again made a resolve of "never again" being in the position of being forced to feed bees in the spring. As menory serves me, I think I have made this same "resolve" at least once before.

Clover has been also checked by the long spell of cold weather; but, as it wintered well, it is still looking good in our locality. However, I hear it is "heaved" some where we have five apiaries south of Hamilton in Wentworth County.

Last week I was again in the wholesale section in Toronto, and inquiry failed to locate any great amount of honey. Seemingly there is but little of last year's crop in the dealer's hands, and it is unlikely that there is much left in the hands of the producers, since beekeepers usually do not hold honey over when they have any reasonable offers to dispose of their crop.

I think that one of the best moves made in recent years toward protecting beekeepers' interests is the concerted effort being made by experts in the matter of keeping "Isle of Wight disease" out of this country. I have long felt that we were living in a fools' paradise by claiming that our climate here in America was not suitable for the development of this dread disease on this continent, and now that it has been found in the Alps, that idea is dissipated; and at the same time the danger becomes apparent, since there is no telling how soon it may invade the sections from which Italian queens are imported. By all means, drastic efforts should be made to keep out this scourge, for, if once established here on this continent, it is quite likely that it would seriously cripple the industry if not wipe it out in many places as it has done in Great Britain.

These lines are being written on the first day of May. I have just returned from working at one apiary, and it was pleasing to see the bees getting pollen and nectar again. This reminds us that, if spared, we shall soon be in the rush of the busy season again. May health and strength be the lot of the many readers of Gleanings, and may success crown the efforts put forth in 1922.

Markham, Ont. J. L. Byer.

XUM

HEADS OF GRAIN FROM DIFFERENT FIELDS

To Prevent Foundation Stretching When Hiving Swarms.

Here is a "kink" which I have not seen in print and which is of value. In hiving swarms on full sheets of foundation the weight of the bees sometimes causes the foundation to become stretched. To prevent sagging, place an empty hive-body (no frames) underneath. The cluster will attach itself to the bottom-bars of the frames above, thus relieving the foundation of the weight of the bees. The empty hive may be removed in a few days after the bees have begun work. E. S. Miller.

Valparaiso, Ind.

[In addition to preventing too much weight on the foundation, the empty hive-body is also of great value if the newly hived swarms are inclined to swarm out. In most cases it will prevent swarming out. For this purpose, it should be left in place three or four days.—Editor.]

West Virginia as a Honey State.

At one time West Virginia produced considerable honey. One region in particular was especially rich in nectar resources. I refer to the famous Canaine Valley, a scope of country 10 by 20 miles in extent, lying on the head waters of Black Fork of Cheat River. This valley was once an inland lake 3,500 feet above sea level. In early days great quantities of wild honey were obtained from trees, sometimes 100 pounds from a single tree, a tubful from another, and a barrel in rare instances. This was all in bygone days when the limestone region which extends north and south through the west-central part of the state was being cleared and seeded down to grass. The hills would show literally gray with white clover. Almost every farmer had his log bee-gums and produced abundance of honey and had a well-filled larder by killing off the heavy ones. The light ones were saved for next year. W. C. Boon.

Shinnston, W. Va.

How to Transfer Bees and Secure Good Crop.

On July 16, 1920, I captured a small stray swarm and for want of a hive put them in an empty nail keg, and to my surprise they secured stores enough to winter. I had therefore this year one keg of bees, spring count. I intended to transfer and divide them on April 15, but a cold snap caught a queen in transit and she arrived dead. So I placed a hive above the keg with an excluder between, the entrance being through the hive. Another queen arrived on the 25th when I moved the keg to a new location and introduced the queen without any difficulty. I placed another hive over the keg without an excluder; but the queen did not come up until June when I put the excluder on to keep her up until all brood was out. Then I put on an escape, did away with the keg and introduced another queen on July 8. I extracted from both colonies the last week in July and again in October, with the following total results: 41 combs fully drawn, 238 pounds of extracted honey, 97 sections (completed), 20 incomplete which were fed back, five pounds of wax and two strong colonies with about 40 pounds each for winter stores. All extracted honey was sealed before extracted, and the sections weighed about one pound each. I have given away some of the honey, have all we want for our own use and have sold to the amount of $52.80.

Royal Oak, Mich. A. W. Stone.

A Swarm-Control Plan That Never Fails.

The following extract from a letter of a beekeeper in New York, together with my reply, may be interesting for publication:

I expect to use your swarm-prevention plan as given in Gleanings in June, 1921, but will use the Demaree plan or a modification of it in addition, as I do not think your plan would prevent swarming in every case.

Our plan of swarm prevention, if you may call it a plan, never fails. Sometimes *we* fail, but the plan if properly carried out never does. If it comes to a show-down, just take out the queen long enough so they have no brood young enough to start more cells, destroy all the cells they have started and introduce a young laying queen. As a matter of fact, I object to our system being called a "plan," as one would speak of the Demaree plan. What I am asking for is intelligent care of the colonies through this critical time, just as a farmer would care for his animals through critical periods in their lives. I think you realize that it is time for beekeepers to get past the wasteful wholesale methods of care, which might be compared to old-time cattle ranching where thousands sometimes perished for lack of individual care.

Georgetown, Ont. Morley Pettit.

Easy Way to Hive Swarms.

I take three frames of strong empty combs and fasten a ⅜-inch narrow board across the middle of the top-bars, leaving a good space between combs, using ⅝-inch screws to fasten the board to the frames. I then fasten a wire to the center of the board to hook in a loop on the end of a pole about six to eight feet long. When a swarm has settled I go to them with a ladder and with my knife cut away any small twigs that may interfere with the combs and put them up against the cluster when they will at

HEADS OF GRAIN FROM DIFFERENT FIELDS

once go to them. I then tie the pole on the ladder till all the bees have settled on them, then take them down. I have my hive ready with four frames lifted out so I can unhook the wire from the pole and drop the cluster and frames into the open space, giving it a good shake after stopping the front entrance a few minutes to stop the rush of bees. I then take out the combs the bees were on and drop in the combs first taken out, which I have close at hand, and put on the cover. If I do not get all the bees the first time, I put the combs back in the tree again, and when all have clustered I take them to the hive and shake them in front. W. S. Williams.

Julian, Pa.

Cool and Dry Weather in Southern California. We are having the worst conditions of weather for beekeeping we have had for many, many years, considering the amount of rainfall we had during the past winter. March and April were comparatively dry. Unless we have rain soon and some warm clear weather, there will not be more than one-fourth to half a crop, and we may be lucky if we have our bees fill up for winter.

Word comes to me that many tons of sugar were fed to bees in certain sections of southern California. Bees that have been left rich or full of honey the previous season will come through in much better condition and not need to be fed. The fact is, many extract too closely and bees go through the winter in a weakened and starving condition, which causes a great loss to anyone that follows that practice.

The exaggerated reports of the great crop of honey expected will be far short when the crop is harvested. These exaggerated reports always have a depressing effect upon the price of honey. A late issue of a beekeepers' periodical of this state, by mistake, made me say that an immense crop is expected in California. I wish to state through your journal that this was not written by me. We can not be sure of a crop until we get it into the cans.

Ventura, Cal. M. H. Mendleson.

Yellow Italians Swarm More Than Darker-Colored. I sent for a few yellow three-banded Italians from Alabama a year ago and noticed the difference in behavior between these yellow Italians and my darker Italians in swarming. I hived a swarm in June of the yellow kind in a Jumbo hive, and the same colony swarmed again in August. The same is true of another colony of yellow bees hived in June. They had many queen-cells started in the first part of August, and if I had not given them so large a super and strengthened other colonies from this hive when I noticed the queen-cells started, they too would have swarmed again in August. My darker Italians do not swarm this way in the fall. Emil A. Lund.

Vining, Minn.

Good Yield in Oklahoma. I started with one colony of black bees in 1918. Now I have eleven colonies of Italians. I had seven colonies last spring. I made increase and after selling six nuclei I have eleven colonies left. One of them had European foul brood so I had to treat it during the honey flow and of course it made no surplus honey. The other ten colonies produced 1000 pounds of extracted honey and 130 pounds of chunk honey. I sold the chunk honey for 25c per pound. I have sold 900 pounds of extracted honey for 20c per pound. H. Sharp.

Shawnee, Okla.

Colony With Two Laying Queens and a Queen-Cell. On June 16, 1921, I requeened a colony with a queen-cell and on June 29 the queen was laying. In looking through this colony on August 11 I saw a little black queen, so I supposed the other queen was dead. Not being satisfied with this queen I decided to requeen the colony. I opened the hive on August 25 to kill the queen and found a laying queen which I killed. She did not look like the one I saw before, so I looked farther and found another laying queen. Next I found a sealed queen-cell which I destroyed. This colony had one brood-chamber and two comb-honey supers, two laying queens and a sealed queen-cell in one hive at one time. I think this is unusual.

Trevose, Pa. E. Sterner.

Wavy Combs From Vertical Wiring. J. E. Crane has some combs over 40 years old free from sag, built on the Van Deusen wired foundation. I tested the Van Deusen foundation, and some of the combs are practically perfect. In hot weather there was a serious waviness and bulge between the vertical wires, and there is a serious tendency for the sheet to curl, even when put in frames with three horizontal wires. If I were to use any foundation such as the Van Deusen, containing vertical wires about an inch apart, I would want all combs drawn before very hot weather, and the sheet of foundation with its vertical wires to extend down between the halves of a divided bottom-bar, to stop the tendency to curl. E. F. Atwater.

Meridian, Idaho.

XUM

HEADS OF GRAIN FROM DIFFERENT FIELDS

To Take Swarms Down from High Trees. When the bees cluster on a high limb and one can not get out to them, we throw a line—at least my son James does. He was in the navy on the "Kearsage" and can "throw lines" pretty well—over a limb above the one the bees are on. Then we hoist up a hive with one brood-comb and several empty combs in it. The bottom of this hive projects about a foot (or more) in front. We have another line attached to the hive so we can swing it in any position we wish. By jerking down on the line we jar the bees on to the platform and top of the hive. It is well to have the top set back, say, an inch or two, so the bees can enter directly through the top. John M. Ware.

Opelousas, La.

Short and to the Point. A good queen is worth from five to twenty-five dollars, but a poor queen is worth very little.

A large working force at the beginning of the honey flow is the same as money in the beekeeper's pocket; but a weak colony at this time is worthless as a surplus-honey producer.

One worker bee of the right age, at the beginning of the honey flow, is worth more than three after the flow is over.

Plenty of super room discourages swarming. Insufficient super room is a stimulation to swarming.

A large amount of drone comb in the brood-chamber signifies a poor beekeeper.

The amount of food used in rearing two drones will rear three workers. A worker is a producer; while a drone is a consumer.

Weak, queenless colonies denote a neglected apiary.

A modern hive in the hands of a slipshod beekeeper is no better then the old box hive or log gum.

A scientific beekeeper is not judged by the number of colonies he keeps, but how he keeps them.

A super of honey on the hive is worth two in the field. Eugene Holloway.

Marietta, Okla.

Good Results from Colony Transferred from Tree. I transferred from a tree a large colony of bees, with brood and all suitable comb, into three ten-frame hives, dividing the bees and brood as equally as I could, introducing southern-reared queens in the two queenless ones, adding two frames of foundation to each colony and placing a division-board beside the frames. This was done at the beginning of the fruit bloom. About two weeks later one of these little colonies swarmed. I put the swarm in a ten-frame hive, giving them a comb from one of the other colonies. I commenced to feed these colonies a little sugar syrup in an Alexander feeder as soon as they were transferred, adding full frames of foundation as needed. I also cut out queen-cells from the one that swarmed, introducing a southern queen. I was surprised how fast they increased in numbers and filled their hives. About the 20th of June 1 put on full-depth supers, raising up a frame of brood and filling out with frames of foundation. These four colonies drew out 65 full frames of combs, and I extracted 180 pounds of honey from them.

Nashville, Mich. Will G. Hyde.

Beekeepers Less Observant Than Formerly. It has appeared to me that during the latter years the scientific interest which formerly made beekeeping so enhancing has been somewhat on the wane, and been substituted by articles of practical results, which can be very interesting; but, as long as we have not a full understanding of the swarming problem, I regret that such is the case. So much has been done for us modern beemen in the time past that we ought to "take up the burden and the lesson" and solve the swarming problem within the next decade. And this can surely be done only by keeping up the scientific interest. Here I must say that, in my own experience, the large number of colonies in modern beeyards is not conducive to scientific observations. Axel Holst.

St. Thomas, Virgin Islands, U. S. A.

Requeening Without Dequeening. While keeping bees in New Mexico, I tried out a plan of requeening without dequeening, that might interest some of the readers of Gleanings. I tried to get virgin queens to mate from the lower story with an excluder between the lower and the upper stories, the old queen being in the upper story, but met with very poor success. I tried the plan with the virgin queen in the upper story and the old queen below with an entrance in the upper story, but that would not work either. I found by the use of a wire screen between the two stories to stop the bees from mingling and by giving them a separate entrance in the upper story the virgin queen will mate all O. K. I found the best plan is to make up a nucleus in the upper story and give it a ripe queen-cell, then after the young queen begins to lay, the old queen can be removed and the wire screen taken away. I make the entrance for the nucleus in the back end of the hive. A. N. Norton.

Homedale, Idaho.

BEES, MEN AND THINGS

(You may find it here)

BRADFORD County leads the other counties of Pennsylvania in the production of honey. There were 6729 hives in the county last year and an average price yield was $6.50. This makes the entire yield in the county $42,738.50. So, beekeeping in Bradford County is quite an enterprise. Ten years ago beekeeping was a thriving industry throughout the state, but the spread of foul brood wiped out thousands of hives. With the improved methods for fighting bee diseases, the industry has once more become profitable, with the result that thousands of new hives are being placed in the state annually."—Phil. Browning, Broome County, New York.

"We are having a very late spring. No fruit trees in bloom here yet (May 9)."—W. J. Sheppard, Nelson, B. C.

"The cold late spring has cut our prospects for a honey crop here 25% in my opinion."—L. L. Andrews, California.

"Bees are in fine shape. Surplus coming in at the rate of 25 pounds a week."—Farmer F. Shaw, Houston County, Texas.

"Honey flow is fine here from holly and black gum and ratan, but not ready to take off yet."—M. N. Wheatley, Sevier County, Ark.

"If the bees had not been fed here this spring we would have lost at least 75% of the colonies."—W. S. Pangburn, Jones County, Iowa.

"More honey consumed at home than ever before. Small beemen last season disposed of their entire crop by selling to farmers."—Dr. J. E. Miller, Idaho.

"Selling honey was also a great pleasure to me. I sold $60.00 worth in one afternoon. I think that is good for a beginner who must meet all those big questions they fire at one."—Geo. H. Foote. Wood County, Ohio.

"I have never lost a colony of bees in the cellar in my life. And I never allow a queen to get over two seasons old, and this year they are all of this summer's rearing. Thirty-two of them."—Edw. Holt, Vernon County, Wis.

"I have very much enjoyed the articles which have appeared in Gleanings in the past months on the subject of securing more perfect combs. I, myself, have experimented a great deal during the past few years on different systems of wiring. I have about come to the conclusion that I like four horizontal wires and one vertical in the center as well as any. Still, no way which I have tried is always entirely satisfactory by any means."—L. J. Ray, Los Angeles, Calif.

"The prospects in the tupelo belt look favorable. A great many bees are short of stores, especially those that were not carried up out of the swamps to the farming belt. Some beekeepers report as high as 25% winter loss."—J. L. Morgan, Franklin County, Fla.

"This strong hive of bees was increased to ten strong colonies by July 15 and produced 167 well-filled pound-sections of honey. Can you beat it?"—John S. Reese, Clark County, Ky.

"Place corn cobs thickly on the surface of standing water. They draw the water like a wick up to where the bees can fill up without wetting their feet. Patent not applied for."—I. W. Cameron, Turner County, S. D.

"I am glad to see some one sticking up for the poor drone. He is not nearly as bad as he is painted. If his mother is good, he is a useful citizen. My motto is, 'Millions of drones from good Italian mothers, but not one black.'"—V. V. Dexter, Kittitas County, Wash.

"This season is certainly an improvement over last in being more normal. Fruit is blooming nearly a month later than last year. Cool nights and warm afternoons make plenty of nectar, and the bloom is being prolonged. Bees wintered better on less stores than last also."—R. E. King, Dickinson County, Kansas.

"My bees wintered outdoors packed with straw 100%. The prospects for honey are the best I ever have seen; also the fruit trees look like a bumper crop. There was lots of honey carried over here from last year. No market here for honey at present. The resort trade will use up all that is carried over I think."—A. W. Pease, Grand Traverse County, Mich.

"As a matter of fact I believe bees do think, perhaps not just as we think, but in a fashion suited to their own nervous system and needs. Their thinking is perhaps more comparable to that of a chauffeur than to other more intricate mental processes. The chauffeur sees an object, his mind enables him swiftly to change his course. The more I worked with bees the more I was convinced of this ability to turn impression into action. I have been environed by psychologists all my life who fight me about my definitions, but I would just like to see one of these psychologists keep bees for a time and take care of them and love them and understand them and then see what he would think about it."—Anna Botsford Comstock, Tompkins County, N. Y.

XUM

GLEANED BY ASKING

Geo. S. Demuth

QUESTION.—What part of the bottom of the cell does a larva that is three days old cover? One that is 36 hours old?

W. Holmberg.
California.

Answer.—Three-day-old larvae cover about three-fourths of the base of the cell. Larvae 36 hours old cover about one-fourth of the base of the cell.

Comb-honey Supers and European Foul Brood.

Question.—Is there any danger of spreading European foul brood by the comb-honey supers if there is no honey in them?

Minnesota. Ephraim Magnuson.

Answer.—There should be practically no danger of transmitting European foul brood by means of empty comb-honey supers that have been stored in the shop all winter.

Weight of Queen and Her Eggs.

Question.—How much does a queen bee weigh? How many eggs does she lay in 24 hours and how many of her eggs would it require to weigh one grain? John F. Johnson.

California.

Answer.—The weight of the queen bee varies according to whether she is laying heavily or not. During the winter when she is not laying at all she would, of course, weigh the least. Ordinarily, she weighs about .25 of a gram or about three and one-half grains. A good queen is capable of laying 3000 eggs in 24 hours, but she does this only during a short period in the spring. The eggs when first laid weigh about .00013 of a gram but weigh less when about ready to hatch. It would therefore require about 500 of these to weigh one grain, or 240,000 to weigh one ounce.

Bees Kill Clipped Queen.

Question.—Is there any danger of the bees killing the queen having her wings clipped, after a number of attempts to swarm?

New York. Roger C. Hinsdill.

Answer.—Yes, if the queen is not lost during an attempt to go with the swarm, the bees after several attempts will give up trying to swarm with the old queen and will wait until one of the young queens emerges, when a swarm will issue accompanied by a young queen, the old queen having disappeared.

Age When Young Bees Begin Field Work.

Question.—How long is it after emergence before the young bees begin gathering nectar?

South Dakota. E. A. Frey.

Answer.—Young bees usually begin to work in the fields when they are about two weeks old, though under some conditions they begin field work several days earlier.

"Put Up" Plan for Swarm Control.

Question.—What is meant by the "put up plan" for swarming? A. T. Cox.

New York.

Answer.—The "put up plan" is the name used by Dr. Miller to designate a treatment for colonies that swarm. The hive is moved away and a new hive put in its place, the new hive containing two or three frames of unsealed brood, but there must not be any queen-cells on these combs. The old hive is then set on top of the new one so that the bees in returning from the field will all enter the new hive. This so depletes the old hive of its bees that the colony gives up swarming and the queen-cells are destroyed. After about 10 days the old hive is put back in its former position and the new one taken away for increase. Instead of setting the old hive on top, it can be placed at one side with its entrance turned far enough away so the returning bees will not enter it, then a few days later, turned back so the entrances are close together before reuniting. When the old hive is set on top, it is placed, bottom and all, above the cover of the new hive, there being no connection between the two hives, each colony having its own entrance.

Empty Chamber Below to Prevent Swarming.

Question.—What is your opinion of the efficacy of placing a super containing only empty frames beneath the brood-chamber as soon as winter is over, to prevent swarming? F. H. Bunt.

Mexico.

Answer.—This will, of course, delay swarming, and in some cases if this delay is sufficient to carry the colony past the critical period for swarming or to the close of the honey flow, swarming is prevented; but in this country, especially in the North, it can not be depended upon to prevent swarming. This is the principle of the Simmins method, the theory of which is that, as long as combs are being built below the brood, there will be no swarming. This plan was tried out in this country many years ago and abandoned as being not at all dependable when swarming is bad.

Changing Supers to Another Hive Without Removing Bees.

Question.—When shifting supers from one colony to another, is it necessary that the bees all be driven out before putting the super on another hive? Frederick Spiker.

West Virginia.

Answer.—Not if there is a good honey flow at the time this is done. During a heavy honey flow it would not be necessary to drive any of the bees out, so far as danger of their fighting is concerned. At other times it is safer to drive most of the bees out, but it is not necessary that all be driven out.

Cause of Loafing During Honey Flow.

Question.—What was the cause of my bees quitting work last summer while the honey flow was still on? J. E. Arnold.

Oklahoma.

Answer.—There are so many things which will cause the bees to work with less vigor during the honey flow that it is not possible to tell what was the trouble in your case.

When bees are uncomfortable from any cause such as a lack of ventilation or being exposed to the direct rays of the sun, they are inclined to hang out on the outside of the hive even when nectar is abundant in the fields. Sometimes loafing is caused by the brood-chamber being clogged with honey. When much honey is put into the brood-combs and especially if it is sealed, the bees will work with less vigor in the supers. This is usually brought about by a slow honey flow or by weak or medium colonies. Sometimes loafing is caused by the colony being queenless and sometimes by the lack of room for depositing the thin nectar as it comes in to be ripened. When the nectar is first carried into the hive it is distributed a little in many cells, instead of the cells being filled with nectar, the bees refusing to put in more when the few drops are in each cell. For this reason it sometimes happens that there is no room for the incoming nectar, even though the combs are light until the nectar has been evaporated and converted into honey.

Demaree Plan for Swarm Control.

Question.—What is meant by the Demaree plan for swarm control? Chas. Fealy.
Alabama.

Answer.—The Demaree plan is the term now generally applied to taking the combs of brood out of the brood-chamber and placing them in another hive-body which is then placed above a queen-excluder, the queen being confined below where empty combs or frames of foundation have been put in the place of the combs of brood. If this is done after queen-cells have been started preparatory to swarming, some prefer to have only empty combs or frames of foundation together with one or two empty combs below; but, if done before any queen-cells have been started, the usual practice is to put one comb containing a little unsealed brood below. This brings about a condition somewhat similar to that brought about by swarming, the swarm being below the queen-excluder and the parent colony above. In 1910, A. C. Allen, Portage, Wis., described a modification of the Demaree plan by which the chamber of brood is placed on top of the extracting-supers instead of immediately above the queen-excluder. This was given at the Wisconsin convention on Feb. 3, 1910, and has been adopted by others and described several times since.

When Further Swarming May Be Expected.

Question.—Is there any danger of either the swarm or the parent colony swarming again the same season when swarms are made artificially by shaking and the parent colony is given a young laying queen immediately? Otto Saewert.
Wisconsin.

Answer.—Some seasons either natural or artificially made swarms will again build up to great strength and swarm again if the honey flow is long. When parent colonies are given a laying queen immediately after swarming there is a possibility that they may swarm again; but, if you destroy all the queen-cells five days after the swarm issued, then again five days later before giving the young laying queen, the parent colony is practically safe from further swarming the same season.

Requeening in Swarm Control.

Question.—In Farmers' Bulletin 1198, page 42, you say, "Now in ten days remove the hive-body containing the queen to a new location, destroy all queen-cells in the upper story which will be placed below for a new brood-chamber and give a ripe queen-cell or a young laying queen." Why not destroy all but one queen-cell and allow the bees to raise their own queen? A. H. Trine.
Indiana.

Answer.—Unless the stock is such that it is desirable to perpetuate it, it is better to destroy all the queen-cells and give one reared from select stock. Many beekeepers start queen-rearing operations in time to have plenty of young queens reared from a breeding queen under the best possible conditions ready at swarming time for such cases. Plenty of young queens on hand during the swarming season are of great value in swarm control. One objection to destroying all but one of the queen-cells is that sometimes a swarm issues when this young queen emerges, leaving the colony hopelessly queenless.

Using Combs Which Contained European Foul Brood.

Question.—Would it be safe to put package bees on combs on which the bees have died from European foul brood? A. E. Moorlag.
Michigan.

Answer.—Much depends upon the condition of these combs. If they are apparently clean and have been exposed to the light during the winter, there should be but little danger of transmitting the disease; but, if they have been in tight piles in darkness all winter, the disease can be carried over and transmitted to the colony in the spring. Combs from colonies having European foul brood should be exposed to the light as much as possible before giving back to the bees. Even then it is safer to give them only to very strong colonies.

When Swarm Loses Its Queen.

Question.—When a swarm issues and loses its queen (she having her wings clipped), then returns to its hive, what is the proper thing to do with the colony? D. E. Scott.
Tennessee.

Answer.—Destroy all but one of the queen-cells and permit the colony to requeen itself with this remaining young queen; or, a better way, destroy all queen-cells five days after the swarm first issued, then again five days later, after which introduce a young laying queen. One objection to the first plan is that sometimes the colony so treated will swarm when the young queen emerges, leaving the colony hopelessly queenless. When the second plan is used great care is necessary when destroying the queen-cells the second time, for these, being built over older larvae, are sometimes difficult to find, since such queen-cells do not project far beyond the comb.

XUM

JUST NEWS

Editors

THE average winter loss in the United States is 9.4 per cent, compared with 8.5 per cent in the preceding winter, and an average of 12.4 per cent for the seven winters preceding. Weakness of colonies or deficiency of young bees due to poor queens, short food supply late last summer, disease, etc., caused a loss of 3.6 per cent; poor winter stores, causing dysentery, killed 1 per cent; failure of the beekeeper to leave enough honey in the hives or to feed if the nectar flow was scanty, caused starvation to 2.1 per cent of all colonies; lack of proper winter protection permitted 1 per cent to perish; and other miscellaneous and unspecified causes led to the death of 1.7 per cent. All told, almost one colony in ten was lost. The above percentages are based on returns from thousands of beekeepers in all parts of the country.

* * *

The beekeeping law for the state of New York has been amended this year and signed by the Governor. Two points of amendment are worthy of consideration: "Persons keeping bees shall keep them in hives of such construction or form of construction that the frames may be easily and readily removed for examination of the brood for the purpose of determining whether disease exists in the brood." There is also a provision which says: "No person or company shall transport, or receive for transportation, any bees from a point within the state to any other point unless said bees are accompanied by a certificate signed by an authorized inspector of the Department stating that such bees are in good healthy condition." These amendments are to take effect June 1, 1923. This will give beekeepers an opportunity to change their box hives for frame hives.

* * *

In our "Who's Who in Apiculture" last month we gave the name of A. W. Strickland, Big Timber, as secretary of the Montana State Beekeepers' Association. It now appears that there are two beekeepers' associations in Montana and that the secretary of the Montana State Beekeepers' Association is Frank E. Clift, Huntley, Montana. For British Columbia we inadvertently published the name of W. J. Sheppard, Nelson, B. C., as secretary of the British Columbia Honey Producers' Association instead of that of John Brooks, Vancouver, B. C., secretary of the Beekeepers' Association of British Columbia. In Maryland the name of Prof. E. N. Cory should have appeared as state inspector instead of that of C. H. Harrison. Mr. Harrison is assisting in teaching in beekeeping in the college. Also in this state the answer should have been "yes" in the column showing whether beekeeping is taught in the college as well as in the next column in regard to inspection, although in this state no separate funds are available for inspection work, this being done in connection with the regular extensios work of the Agricultural College.

* * *

The following is the schedule of beekeepers' meetings as far as definitely arranged by the Schedule Committee of the American Honey Producers' League: South Dakota meeting to be held at Mitchell on June 9; Oregon at Portland on June 24 and also at Hermiston on July 1, and at Ontario, on July 3; Texas (Beekeepers' short course) at College Station, July 24 and 25; Wisconsin Beekeepers' Chautauqua at Green Bay, August 7 to 11. The following meetings are to be held on the following dates but the places of meeting have not yet been decided upon: Central Oregon District, June 29; Missouri, July 7 and 8; Mississippi, July 17 and 18; Pennsylvania, August 4; New York, August 5; Vermont, August 12; New Hampshire, August 16 and 17; Tennessee, August 21 and 22; Alabama, August 23; Georgia, August 24 and 25; North Carolina, August 30 and 31.

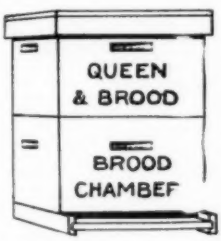
* * *

"Beekeeping in the Clover Region," has recently been issued by the United States Department of Agriculture as Farmers' Bulletin No. 1215. The authors are Dr. E. F. Phillips and Geo. S. Demuth. The clovers included in the discussion of this bulletin are white clover, alsike clover and red clover. In the introductory paragraph, it is said that beekeeping practices in the United States have been developed largely in the clover region, and because of this fact the literature of the subject deals chiefly with methods applicable to this territory. Nevertheless the clover region is failing to produce the honey it should, says this bulletin, chiefly because the methods that give the best results for the region are not clearly analyzed and there are so many to choose from that the beekeeper can with difficulty decide which are best. The purpose of the bulletin is then stated as endeavoring to simplify the problem of the beekeeper of the clover region by describing those practices which have been proved most effective. A single system is outlined in the bulletin, and this is the one which the authors believe will give the best results in most clover locations. Address the United States Department of Agriculture, Washington, D. C., for Farmers' Bulletin 1215, if you wish this valuable contribution to beekeeping.

TALKS TO BEGINNERS

Geo. S. Demuth

THIS month should bring the main honey flow in the greater portion of the United States and Canada. Wherever white clover or alsike clover furnishes the greater portion of the nectar for the honey crop, beekeepers will watch anxiously this month for indications of the beginning of the honey flow. When it comes both bees and beekeeper will be busy and happy if the season is at all favorable. In the southern portion of the clover region (the southern boundary of which is roughly the Potomac and Ohio rivers, though in certain spots farther south white and alsike clover are important honey plants), clover may be expected to begin yielding about the first of June or even a few days earlier; while farther north it may not begin to yield until about the 20th or even later, the exact time of beginning depending largely upon the weather. It is usually about 10 days after the first few scattered clover blossoms are seen before the honey flow from clover begins; but, too often, bad weather interferes to postpone the beginning still further.



Previous to the honey flow the queen occupies both stories.

In the West and the Northwest where alfalfa and sweet clover are the main sources of nectar, the honey flow may also be expected to begin sometime this month. In this region, especially at higher elevations, the honey flow may not begin until late in the month.

Even in some locations in the South, June is the honey month; so that for most of the country this is indeed the "high tide of the year," so far as beekeeping is concerned.

How to Recognize the Honey Flow.

The beginner will have no difficulty in recognizing the beginning of the honey flow, for, coming as it does in many places after a dearth of nectar, the greatly increased activity of the bees going in and out of the hive is quite noticeable. By watching the returning bees as they alight at the entrance, one can tell if they are heavily laden by the distention of their abdomens and the manner in which that part of the body hangs downward as they slow down to alight.

Inside the hive, the newly gathered nectar can be seen glistening in the cells even in the midst of the brood-nest wherever a cell happened to be vacant, and the comb-builders begin to put white wax on the combs or between and above the top-bars of the brood-frames.

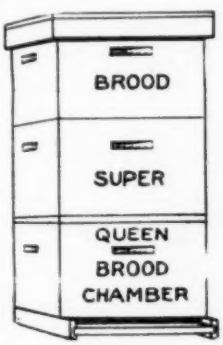
One of the most noticeable things inside the hive at the beginning of the honey flow is the sudden expansion of the colony, the bees now crowding into the most remote parts of the hive if the colony is strong. If the super is not already on the hive, it should be put on at once to give room for this expansion.

Change in Management When Honey Flow Begins.

While previous to the honey flow the thing of greatest importance in the management was to encourage the rearing of a large amount of brood in order to have a great horde of workers for the harvest, the problem at the beginning of the honey flow is to get the most out of these workers. Two things now stand out of supreme importance in the management, the prevention of loss from swarming and the supplying of room for surplus honey at the right time and in the right manner while the honey flow lasts.

Sometimes the honey flow proper lasts only a week or two, and five or six weeks is considered a long honey flow. A large crop of honey can be secured within a short time if all goes well, for sometimes the daily gain runs as high as 15 pounds or more during the best part of the honey flow, so the importance of having every condition just right to induce the bees to bend all their energy to gathering and storing can readily be appreciated.

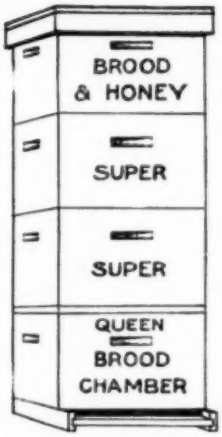
Much depends upon keeping pace with the colony as it expands its work, to be sure that a portion of the crop is not lost from want of room in which to store it and keeping the bees comfortable so that their work can be carried on without interruption. Too often beginners supply themselves with but one super and lose a large part of the crop because they have no more. Some seasons a single super is enough to hold all the surplus honey of the season; but, if the season is good, four or five supers for each colony may not be enough.



Queen is put below excluder and brood placed above the super.

Management of Supers for Extracted Honey.

Strong colonies that were given a second story several weeks previous to the honey flow, as advised in these talks last



When another super is needed it is placed immediately above excluder or above first super.

month, should be given a third story at the beginning of the honey flow, if not before, when extracted honey is to be produced. When this third story is given the queen should be put into the lower story and confined there by a queen-excluder. The queen will usually be found in the upper story at this time. To do this the upper story should be set off and placed on another hive bottom, with no more disturbance than necessary and without smoking much at the top, which might cause the queen to run down into the lower story; after which each comb should be carefully taken out and looked over until the queen is found, when she can be picked up by the wings and transferred to the lower story. The queen-excluder should then be put in place, and, if the weather is warm, an extracting-super filled with empty combs set directly above the queen-excluder, the former second story being placed on top as the third story. If empty combs are not available for this, frames filled with foundation should be used, in which event the combs of the former second story should be divided between the two upper stories to induce the bees to draw out the foundation promptly, the combs of brood being placed in the middle with frames of foundation at each side.

Ten days later these combs in the upper story should be examined to find and destroy all queen-cells, unless it is desirable to make increase, in which case three or four of these combs with adhering bees can be put into a new hive to form a nucleus, being sure that at least one of these combs has queen-cells on it. When this is done, frames of foundation should be put in the super to take the place of the combs of brood that were taken away.

These combs of the former second story having brood in them are to be left above the queen-exeluder until the brood emerges and the combs are filled with honey, when the honey may be extracted or (a better way) left on the hive for reserve stores for winter and spring.

Additional supers should be added if more room is needed, giving each additional super just a little before it is needed rather than wait until the colony is compelled to slow down its work on account of a lack of room. When the new super contains frames of foundation (nothing less than full sheets should be used) instead of empty combs, it is a good plan, when each new super is added, to take off all but one of the supers, then take out half of the partly filled combs from the middle of the super left on the hive, and put in frames of foundation to take their place, the combs removed being put in the new super, with the other frames of foundation, which is then put on as the third story, or, if near the close of the season, it can be placed on top.

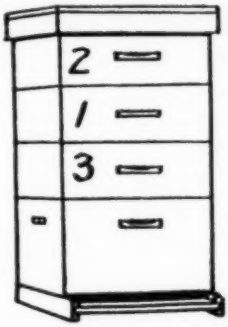
Management of Supers for Comb Honey.

When comb honey is being produced it will not do to put the super of sections on top of the second story, if a second story was given previous to the honey flow to supply more room for the queen. Neither will it do to put it between the two brood-chambers, for the bees in building comb in the sections would darken it with bits of wax from the brood-combs above; so it is necessary to reduce the colony to one story during the honey flow for comb honey. In doing this most of the brood should be put into the brood-chamber that is left, choosing as far as possible the oldest brood, which can be distinguished by its emerging bees or by picking off a few cappings to note the age of the pupae. This older brood will soon emerge, giving the queen more room for eggs. If there are three or four colonies to work with, the extra combs containing some honey and brood, after the bees have been shaken off, can be put back into the hive-bodies, which are then tiered up on top of one hive, choosing for this the weakest colony. If the season is favorable this colony should fill these combs with honey after the brood has emerged, thus furnishing a large reserve of stores to be distributed to the other colonies after the comb-honey supers are taken off at the close of the season, thus again making them two stories high.

A prompt beginning in the first comb-honey super is important.

Those who have but one colony will have to work out some other plan for disposing of the extra combs of brood and honey, if the colony is occupying two stories at the beginning of the honey flow. One way to do this is to form a small colony from the extra combs of brood. This should not be attempted unless there are more combs of brood than will go into one brood-chamber. If the colony is quite

Second super placed below the first.



Third super is placed adjacent to brood-chamber and first super just above it.

strong there may be from two to five extra combs of brood. In such cases, these extra combs of brood, together with the adhering bees, should be put into another hive together with the combs which contain no brood, being sure that the queen is left in the main colony on the old stand. When making increase in this way, combs of emerging brood should be taken instead of combs of unsealed brood, in order to enable the little colony to build up without losing any undeveloped brood by chilling. The entrance should be closed with grass to confine the bees in this little colony the first day, so that too many of them will not go back to their old home.

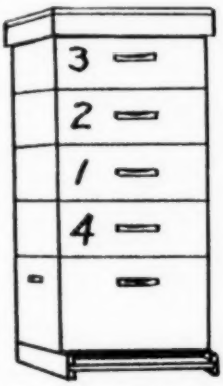
While this little colony can raise a queen, if some of the brood-combs contain recently hatched larvae or eggs from which to raise her, queens reared in small colonies usually are not as good as those reared in larger colonies; so it may be better to purchase a queen for this little colony.

Just when to give the second comb-honey super depends upon the strength of the colony and the rapidity of the honey flow. If the bees enter the first super promptly and begin working in most of the sections at about the same time, the second super should be given within a week if the bees continue working well, even though the first super is less than half full. If things look favorable for a continuation of the honey flow this second super should be placed below the first super adjacent to the brood-chamber. If the honey flow is slow or the colony is not strong, so that the bees begin work in only a part of the sections in the middle of the super and work outward, it is better to put the new super on top until the bees begin to work in it there, when it can be placed below and another empty one placed on top, if needed. No comb-honey super should be raised up and an empty one placed under it until the bees have drawn out the foundation and started to build out the cells in every section. Placing the empty super under the partly filled one causes the bees to expand their super work more rapidly than when it is placed above. This is highly desirable when the honey flow is heavy and the colonies are strong; but, if the work in the supers is expanded too fast, the sections will not be so well filled and at the close of the season there will be too many unfinished sections.

In order to encourage the bees to finish the first super promptly, some beekeepers prefer keeping it in position as second super until it is finally finished. When more than two supers are given, those which are partly filled are each in turn transferred to a new position above the one nearest completion, as shown in the accompanying illustrations, thus keeping the first super near enough to the brood-chamber to cause the bees to finish it promptly if the colony is strong and the honey flow is good.

Keeping Colonies Comfortable Reduces Swarming.

During hot weather the bees should be kept as comfortable as possible. It is well for the beginner to keep in mind that if the bees are always comfortable and have plenty of room there is much less tendency to swarm than when conditions are less favorable. The hives should be shaded by means of shade boards which project beyond the edges of the hive if single-walled hives are used, and the entrance should be opened to full size, giving an entrance ⅜ inch deep by the full width of the hive.



First super left in same position until finished.

While there is plenty of nectar to be had the bees should not be permitted to cluster on the outside of the hive. This indicates that the colony needs more room or more ventilation. Of course, after the honey flow has passed it is entirely normal for the bees to cluster on the outside of the hive during hot weather, but during the honey flow they should all be at work.

If any colonies swarm in the midst of the honey flow the swarm should he hived as described last month, so that the working force of the colony shall not be divided during the precious hours of the honey flow.

When swarming occurs in the midst of the honey flow, the swarm should not be given a new location, for this divides the working force of the colony so that neither the swarm nor the parent colony is able to do much work in the supers. But when the swarm is hived in a new hive, placed on the old stand as described last month, and the supers are transferred from the old hive to the new one, the newly hived swarm will have all of the field bees, so that work in the supers should continue without interruption. The parent colony being moved to one side loses its field bees because they enter the new hive on the old stand as they return from the fields. A week after the prime swarm issued, the parent colony is again moved to a new location, this time some distance away to prevent after-swarming, which again strengthens the new colony.

OUR HOMES

A. I. ROOT

And the Lord God said, It is not good that the man should be alone. I will make him a help meet for him.—Gen. 2:18.

Whosoever liveth and believeth in me shall never die.—John 11:26.

Eye hath not seen, nor ear heard, neither have entered into the heart of man, the things which God hath prepared for them that love him.—I. Cor. 2:9.

MY good friends, I am once more back in my Ohio home—or at least, *a part of me* is here. But more of this later on. Now if you wish to get the most good out of this Home paper, and at the same time save me repetition, please turn back to page 42, last January, and read it over. I told you there, that when I came home with an armful of groceries I found Mrs. Root lying on the floor of the kitchen. I think her head rested on one arm, or at least she looked perfectly natural. Her face was peaceful, just as if she were asleep, and no mark or trace of any suffering could be seen. I took hold of her hand, and it seemed as warm as usual, and then I laid my hand on her face, thinking she was only in a faint. I called my nearest neighbors; and as a doctor happened to be in the neighborhood we had him in a very few minutes. Then I hastened back, and called her by name; and finally with quivering voice, I said, "O Sue! Can you not answer me?" It was the first time in the sixty-five years of our acquaintance that she had failed to answer. I might also say it was the first time she had failed to give me her bright smile of love, and faithfulness to our marriage vow. There are women, and I am afraid there are wives, who have their spells of pouting or refusing to talk. Mrs. Root never had such a spell for *even an instant* in all of our married life. Of course we had our difficulties. I mentioned one of them in our December issue. At another time one of our boys was disobedient, and flatly declared that he would not obey his father, and it was in regard to quite a vital matter. Mrs. Root was present, and she begged to be allowed to take the young man in hand. In fact, it was about the first time in his life that he had begun to feel the *manly* impulse, and along with it he had got the boyish idea in his head that he was just as good a judge of what was proper and right as his father, or maybe a little better. I was brought up in the old Connecticut style—"spare the rod and spoil the child," and I do not know but I was thinking about the "rod" for "desperate circumstances." Mrs. Root and I, for almost the first time, did not agree; but I remembered my religion sufficiently, to think it was time for me to stop, and I shut my mouth and refused to say anything further. But we two, for almost the first time, did not feel pleasantly toward each other. Before going to bed, however, there was to be a prayer by the bedside, and I, at least, was not in a praying frame of mind to kneel down. After considering a moment I smilingly put out my hand to her; and, oh how quickly she took it in both of her hands and then put her arm around my neck and cried! Instead of discussing the matter further in the morning with the boy, I said nothing. I let the good mother manage the affair. My good friends, you who have faith, will believe me when I say, a mother's love is a stronger power, a stronger force, than all the "rods," and I do not know but I might say than all *prisons* and *penitentiaries* on the face of the earth. O dear mothers whose eyes rest on this page, do you realize the power that the loving Father has placed in *your* hands and hearts? Once more let me quote:

> The hand that rocks the cradle
> Is the hand that rules the world.

or at least *is* now ruling the world. Let us now go back.

When the doctor arrived he took a tiny flashlight from his pocket and turned up one of her eyelids and then shook his head. Said I:

"Doctor, do you mean to say that there is no chance?"

He shook his head again, and said the test he had made had never been known to fail. Then I slowly began to realize what it meant to me—never more in *this world* could I again see my greatest friend, instructor and adviser. The only hope of ever seeing her again, and being once more united to the dear wife, was in the world to come, after death. And then I began considering and going over what good proof poor humanity has of a future meeting. Of course it all comes from the Bible, and, I might almost say, from the dear Savior's words; for he alone passed through death and came back to life. With all the progress that is being made in the sciences, in scanning the heavens, in making new discoveries pertaining to health, electricity, wireless, etc., nothing has ever touched that great unknown life beyond this. I hope you all agree with me when I say the spirit rappings of years ago, and everything that has come along that line amount to just nothing. I feel like saying that no person having good sound sense will listen for a

moment to what spiritualists have in the way of proof.

I commenced hunting my Testament for the words of the Savior. I studied his words as I never did before. Our good pastor came to my rescue, and I questioned him. He referred me to quite a number of passages. The dear friends who have sent in words of comfort and sympathy have given me inspiring passages from God's holy word along the same line, but I am sorry to tell you that they did not at the time seem to be very satisfying; but while I was in the dilemma I happened to notice an inquiry in the Christian Herald as to what *proof* we have that we shall know and recognize each other in the world to come. The editor gave quite a number of quotations—in fact, I think he gave pretty nearly a whole page—but finally concluded by saying the dear Savior did not see fit to give us anything very positive. But the Christian Herald said we are to take it as granted from the mass of evidence that comes so close to it; and our church hymns are full of it, especially the gospel hymns given us by Moody and Sanky.* I am now going to tell you a little of my researches. Our good pastor gave me all the passages that he could hunt up. Somebody suggested (or maybe it was the Holy Spirit) the declaration of Christ in the parable of the lost sheep, where he says, "Joy shall be in heaven over one sinner that repenteth, more than over ninety and nine just persons which need no repentance." After this follows the parable of the prodigal son. Now comes the question, who is it in the above that rejoices? By an examination of both passages it seems pretty plain that it is not only angels but the inhabitants of the earth who have gone to their reward. They are permitted to know what is going on here in this world of ours to a sufficient extent, at least, to see the work of spreading the gospel and reclaiming lost souls. Of course things are not going on in heaven as here on earth. You will remember they were going to puzzle the dear Savior once by telling about a woman who had had seven husbands, and they asked him whose wife she should be in heaven. He replied, "When they shall rise from the dead, they neither marry, nor are given in marriage; but are as the angels which are in heaven."

Now, friends, while they neither marry nor are given in marriage in heaven, they no doubt respect marriages made here on earth; and *repentance* is all made in this life instead of the life to come. I think I am right about it, am I not? The only chance to *repent* is here on this earth.

Moses and Elijah at the transfiguration give us very plain and positive evidence of the life beyond the grave; and we can take it for granted that these two veteran heroes were well acquainted and were keeping tab on affairs here on earth. Well, in Luke 23, verses 42 and 43, the penitent thief's dying words were, "Lord, remember me when thou comest into thy kingdom"; and then came the quick and blessed response, "To-day shalt thou be with me in paradise." This matter came up years ago on these very pages; and somebody tried to spoil my rejoicing over it by saying the word "paradise" ages ago did not mean what it means to us now. I replied that I did not care what it meant or means now. To be with Jesus would be paradise to me without anything else. And please notice that the dear Lord did not say that he and the penitent thief were to be alone in paradise. Every penitent thief since the beginning of the world, no matter what his sins, provided they were truly repented of, was included. And, by the way, I think this would include both Moses and Elijah. At the time of the dear wife's removal from this earth everything seemed to center on the words of the dear Savior. I have been spending hours in hunting up all of his precious words to a sinful world. My faith in him, since he, in almost one moment "lifted *me* from the sinking sand," shall never fail. A sainted follower of the Lord Jesus, in olden times, ended a verse thus:

"But this I do find,
He'll not be in glory
And leave me behind."

That describes my own faith in the Lord Jesus Christ better than anything else I can think of.

Notwithstanding the comfort I received from reading the Bible, and praying every day, again and again sorrow for the dear lost wife would come back to me; but searching the scriptures, and prayer were a great help, and the kind letters I received were an additional help. Let me give you two of them. The first comes from H. G. Rowe. In years gone by Mr. Rowe was one of the pupils in my Sunday-school class. In closing a letter he writes as follows:

May I now express to you my sincere sympathy in these sorrowful days that are yours? I

---

* By the way, it occurs to me I should tell you that, after searching my Testament, I began to feel a great longing for the Gospel Hymns. (I find in a pocket edition there are something over 400 of them.) In starting mission Sunday schools, years ago, we made great use of these Hymns, and in many places and on many occasions I had to lead the singing, and so I was more or less familiar with the greater part of them. Well, right after Mrs. Root's death these Gospel Hymns had a new attraction and a new meaning. Snatches of them would come to memory not only during the day but sometimes in the night; and it was a wonderful comfort to me to be permitted to sing them aloud. It finally came to be understood that if I should break out singing some of these precious old hymns in the middle of the night no one was to pay any attention to it; and even now, after Mrs. Root has been away almost six months, every few days a new hymn comes to me that gives me wonderful comfort and joy. The chorus of one of Wesley's hymns came to me just this morning, and set me to praising God, both for the melody and the beauty of the sentiment it expresses. It is as follows:

"I do believe, I now believe
That Jesus died for me,
And that he shed his precious blood
From sin to set me free."

have very, very often thought of you since Mrs. Root's death, and I have learned with very great satisfaction how bravely you are bearing this burden of sorrow. May I tell you of a little incident that happened immediately after Mrs. Root's death here? Several of the office men were standing together speaking how heavy the blow was that had fallen upon you, when one said this: "You fellows all say how lonely A. I. Root must be down there alone in Bradentown, but I want to tell you he is not alone the way you or I would be, for he, literally, walks in the friendship and companionship of God, and God is just as actually at present a friend to him as his dead wife could be." I could not help thinking what a compliment this was to your religion and your faith in that religion.

Again expressing my sympathy to you and extending to you my every well wish, I am,

Yours sincerely, H. G. ROWE,
Managing Editor, Gleanings in Bee Culture.

Let me now tell you, my dear friends, that the man who said the above in quotation marks was none other than the boy Jacob of years ago (see page 582, September, 1921) whom I told you about, and whom I found in the Abbeyville Sunday school of years ago. Perhaps he has put it a little too strongly in saying that God is just as actually present, and is just as good a friend to me, as was the dead wife. I felt that I did not really live up to that high standard, but I tried hard, and prayed that I might be strengthened by that high testimonial.

Another letter comes from a good Christian friend of mine, and a beekeeper of years gone by, Mr. Christian Weckesser.

To my dear old friend A. I.: You have my sincere sympathy in your loss. I think I know how to sympathize; while my own loss seems so great, and though she was called away over a year ago, the loss is as keen as ever, to me; still the lines of Whittier come to mind often. I will enclose them. Christian Weckesser.
Doylestown, Ohio, March 30, 1922.

"And yet, dear heart, remembering thee,
Am I not richer than of old?
Safe in thy immortality,
What change can reach the wealth I hold?
What chance can mar the pearl and gold
Thy love hath left in trust with me?

"And while in life's late afternoon,
Where cool and long the shadows grow,
I walk to meet the night that soon
Shall shape and shadow overflow,
I cannot feel that thou art far,
For near at need the angels are.
And when the sunset gates unbar
Shall I not see thee waiting stand
And, white against the evening star,
The welcome beckoning of thy hand?"
—Whittier.

If you will turn to page 253 of Gleanings for April you will see that our talented friend Grace Allen has grasped hold of the same faith that inspired Whittier in the quotation above.

Let me tell you that my days and hours have not *all* been sorrowful. There have been times when I felt the presence of the Holy Spirit to such an extent that I got at least a *glimpse* of what Peter calls "joy unspeakable and full of glory."

In closing let me say that the salvation of this whole world depends, in my opinion, as much, and perhaps more, on the faithful observance of the marriage vow taken when you two started out in life together. If you hold fast to anything, as sacred and important, let it be your marriage vow. Dear Mrs. Root—bless her memory—was faithful every hour and every minute of the 61 years we lived together.

In 1859 I got hold of a book on shorthand entitled Pitman's Manual of Phonography. At that time I was keeping a diary, and writing in it every day. But my homemade shorthand was such that it is almost impossible for anybody to read it now; but my long-time friend, W. P. Root, has managed to "translate" the following:

"Tonight ends the year 1859, and tomorrow it will be 1860. Another year has past and gone. The greatest event of this year has been a reconciliation with my own dear Sue. **Mine, for ever.**"

By the way, one of the best illustrations of the way a man feels (or should feel) after the loss of a good wife occurs to me right here. It may sound a little slangy, but it seems to hit the right spot. A writer said he and the good wife had been working in harmony in all their undertakings to such an extent that they worked like a pair of shears. One blade, of course, is of no account without its mate; and many times of late I have had the feeling that for the rest of my life I should be something like a pair of shears with *one of the blades missing.*

Flying-machines Versus Horses, Trucks, Railways or Steamboats.

"Coming Events Cast Their Shadows Before."

Right close to the office where I dictate is a hive of unusually energetic Italian bees. They are just now scampering into the hive, not only with great loads of honey but tremendous loads of golden-yellow pollen. The honey comes from the fruit bloom, but I have not yet decided where they get such big loads of pollen. Well, now, this thing has been going on, I might say, ever since the time of Adam; and yet so far as I know no one has as yet even suggested that the bees demonstrate to us that the cheapest way to move freight of any sort is by the "AIR" route. Here in Ohio, as I have told you before, we have a clay soil on which, sometimes, without good roads, a team can do but little more than pull an empty wagon, while we are spending millions in making good hard roads, only to find that these newly invented trucks that carry so many tons spoil our roads almost as fast as we can make them. Then we have to go to a still larger expense to lay tracks through hills and valleys for steam and electric cars. When Wilber Wright made his first trip out into the great free air and back again with his flying-machine, I told him that he had that day demonstrated the possibility of travel without macadamized roads or railways.

Now, will somebody get right to work and tell what proportion the honey and pollen bear to the weight of the bee that carries them? and has not the bee been demonstrating for ages past the superiority of the "air route" over anything else for moving

things, whether it be human beings or carloads of grain to feed the starving, somewhere, on this big earth of ours?

One of my hobbies in childhood was windmills, to get hold of the wind and use it. A little later on it was electricity. Praise the Lord, it *did* get into my head that the two could be linked together, when I was near 80 years old; and it seems likely that the third hobby of mine—the possibilities of the outcome of bee culture—might link in flying also, with the work of the honeybee.

"Mend Your Own Tinware."

I think that the first time the name of A. I. Root appeared in print was about 65 years ago, when an advertisement appeared in the Scientific American, then just newly started. This advertisement was headed, "Mend Your Own Tinware"; and below you read, "Amos I. Root & Co., Medina, O.," would send the needed materials, with all directions, for 30 cents. If I remember correctly my apparatus for soldering gave at least general satisfaction. I do not remember any complaints, and I received quite a little money. As I look back, however, I feel pained to think of that "& Co." If I remember correctly, my good mother *did* remonstrate, but I told her that was the way "all business men did."

Well, in view of the above you may imagine my surprise to see a man on the Manatee County fairgrounds, in Florida, with an announcement on the board over his head, reading "Mend your own tinware." He had a little lamp very similar to the one I used years ago, and then he had sheets of different kinds of metal, and old rusty tin, zinc, galvanized iron, etc. He would punch holes in the various metals, then hold a piece over the flame of his little lamp and apply a little of the solder; and even rusty iron, tin, etc., were mended in a twinkling. He did not even scrape the rusty metal, and he did not apply any flux or acid. Let me remark right here that until quite recently we were told that aluminum could not be soldered; but this new alloy worked beautifully on a sheet of aluminum. The price of the "solderine" was 25 cents, or three outfits for 50 cents. The printed matter accompanying read as follows:

ALUMINUM MENDING SOLDER.

Guaranteed to mend any kind of metal without the aid of soidering iron, acids, rosin, scraping or cleaning. Mends radiators, copper boilers, galvanized iron tubs, brass, iron, tin or zinc, water pipes, gas pipes, lead pipes, bath fixtures, enamel, granite and aluminum ware.

SOLDERINE.

Directions for Using.

Place the article you wish to mend over some kind of flame for about one-half minute (don't overheat); take a stick of solder like a lead pencil and rub a little in a circle around the hole until you cannot see the fire underneath. Remove and allow solder to become hard. Price 25 cents. United Specialty Co., Atlanta, Ga.

Just as soon as I saw how beautifully it did the work I wrote to the address above, but my letter was returned as "Uncalled for." Then I sent it back with orders for "special delivery"; but my letter came back again saying no such place could be found. Now, I hope this notice may be the means of enabling me to learn where I can buy more of this "solderine."

The metal is very much lighter than common solder, and melts much easier. But to show how it would stand the racket, the man would double it up and pound it with a hammer, and it acted exactly like metal soldered with a soldering-iron. What surprised me more was that it would stick almost as well to rusty *enameled* ware, even if it did not get hold of the metal at all. From what experience I have had in repairing utensils, not only at home but in working with metals in different factories, it seems to me the invention may be worth millions of dollars to the world. The piece of metal is about as large around as your little finger, and there is a hole in the center that probably contains some sort of acid or flux; and the best of all is that it *does the work*. When I find out where it can be purchased I will let you know. If any of the readers of Gleanings can give me any information in regard to the matter you may be sure I shall be very glad to get it. I put an advertisement in the Bradentown Herald to find out if the man left it for sale in that vicinity, but at present writing I have had no response.

"Give Us This Day Our Daily Bread"—Daily Bread for the Hungering World.

I am praying that the Lord will let me live long enough to see practically enough food provided in some way so that there may be no starving—at least in a wholesale way—on the face of this whole wide earth. I am not worried so very much about the men folks, especially the men folks who starve because they will not get to work and "look out for a rainy day;" but I am anxious about the mothers and babies—especially the mothers who bore the babies. These mothers, while they are doing the work of bearing the babies and keeping mankind on the face of the earth, should be abundantly fed, and fed with the best and most nourishing food. Well, in view of the above just imagine with what energy I said "Praise the Lord!" when I read the following in the Christian Herald:

"Now comes confirmation of the welcome news that 'America has broken the back of the biggest famine in the world's history!' The seemingly impossible has been done, and done so thoroughly that a considerable proportion of the fund provided for Russian relief remains unexpended. Sixty-five cent of the famine areas are now sown with grain. Not only has the famine been checked, but American medical and hygienic skill has succeeded in allaying the widespread outbreak of typhus and other diseases in many localities. In a hospital in Moscow, equipped by American gifts, the deadly typhus germ has been discovered and isolated by a woman Russian scientnist, Dr. N. Kritch. This is regarded as one of the most important medical discoveries in a century."

"All hail," to the Russian *woman* doctor.

XUM

Classified Advertisements

Notices will be inserted in these classified columns for 50c per line. Advertisements intended for this department cannot be less than two lines, and you must say you want your advertisement in the classified column, or we will not be responsible for errors. For special conditions on bee and queen advertising, please write us. Copy should be received by 15th of preceding month to insure insertion.

REGULAR ADVERTISERS DISCONTINUED IN GOOD STANDING.

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontinued when they are in good standing.)

Curd Walker, L. C. & Oscar Mayeux, Baughn Stone, I. J. Stringham, Weber Bros. Honey Co., Farmer Apiaries, O. E. Tulip, A. J. Pinard, T. W. Burleson, Abston Apiaries, H. L. Murry, W. H. Laws, J. D. Kroha, Chas. W. Zweily, E. D. Townsend, J. W. K. Shaw & Co., L. Parker, Jones & Stevenson, Jes Dalton, Dr. Chas. F. Briscoe, P. M. Williams, Jul Buegeler.

HONEY AND WAX FOR SALE.

FOR SALE—Clover, amber and buckwheat honey, 60-lb. cans and 5 and 10 lb. pails. C. J. Baldridge, Kendaia, N. Y.

FOR SALE—Choice saw palmetto honey, 390-lb. barrels, $35.00; 10-lb. cans, $1.25 f. o. b. Ward Lamkin, Arcadia, Fla.

FOR SALE—25 tons fine extracted white clover honey at 12c. Comb honey prices on request. Dr. E. Kohn & Son, Grover Hill, Ohio.

FOR SALE—12,000 lbs. of choice white clover honey, well ripened, put up in new 5 and 10 lb. pails. Sample 25c. W. B. Wallin, Brooksville, Ky.

FOR SALE—White honey in 60-lb. cans, also West Indian in 50-gal. barrels. Samples and price on request. A. I. Root Co., 23 Leonard St., New York City.

HONEY FOR SALE—In 60-lb. tins, water-white orange, 15c; white sage, 14c; extra L. A. sage, 12c; buckwheat, 10c, etc. Hoffman & Hauck, Woodhaven, N. Y.

FOR SALE—Clover honey, case, two 60-lb. cans, $14.00; case, six 10-lb. pails liquid honey, $9.00. Special prices on larger quantities. Sioux Honey Association, E. G. Brown, Pres.; C. S. Engle, Sec.-Treas., Sioux City, Morningside Sta., Iowa.

HONEY AND WAX WANTED

WANTED—Honey, section, bulk comb and extracted. Elton Warner, Asheville, N. C.

BEESWAX WANTED—For manufacture into SUPERIOR FOUNDATION. (Weed Process.) Superior Honey Co., Ogden, Utah.

WANTED—Shipments of old combs and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, Ohio.

WANTED—Beeswax. We are paying 1c and 2c extra for choice yellow beeswax and in exchange for supplies we can offer a still better price. Be sure your shipment bears your name and address so we can identify it immediately upon arrival, and make prompt remittance. The A. I. Root Co., Medina, Ohio.

FOR SALE.

HONEY LABELS—New design. Catalog free. Eastern Label Co., Clintonville, Conn.

FOR SALE—One Root two-frame Novice extractor. Price, $18.00. Box 172, Riverside, Ills.

YOU will make no mistake in ordering your comb foundation of E. S. Robinson, Mayville, N. Y.

FOR SALE—15 Danz. hives, complete, full frames and 15 supers. 1st Flat, 4712 Beacon St., Chicago, Ill.

FOR SALE — "SUPERIOR" FOUNDATION, "quality unexcelled." Let us prove it. Order now. Superior Honey Co., Ogden, Utah.

PORTER BEE-ESCAPES save honey, time and money. For sale by all dealers in bee supplies. R. & E. C. Porter, Lewiston, Ill.

FOR SALE—Good second-hand 5-gal. cans, two to the case, per 25 cases, $15.00; per 100 cases, $50.00. A. I. Root Co., 230 W. Huron St., Chicago, Ill.

FOR SALE—Good second-hand 60-lb. cans, two cans to case, boxed, at 60c per case, f. o. b. Cincinnati. Terms cash. C. H. W. Weber & Co., Cincinnati, Ohio.

FOR SALE—2 locations, about 500 colonies bees in good cypress and white pine 10-frame hives. Am moving to another part of the state. R. H. Fryer, Sumatra, Fla.

FOR SALE—Good, used once, second-hand 60-lb. honey cans, two cans to a case, boxed, at 35c per case, f. o. b. Milwaukee. Terms cash. Laabs Bros. Company, 2001 Walnut St., Milwaukee, Wis.

FOR SALE—25 eight-frame Root hives, slightly used, clean, two-story high, metal covers and with under covers, Danz. bottoms, newly painted, in one lot, $50.00. A rare bargain. Edwin G. Baldwin, 55 Division St., Ashtabula, O.

FOR SALE—50 cases (2 cans each) new 60-lb. tin-cans. 125 supers for 4¼ x 1½ plain sections, nailed and painted, nearly new. 20 supers as above in original packages of five. All these goods cheap. Geo. Dodds, Cambridge, N. Y.

FOR SALE—15 one-story 10-frame Root hives, metal covers, combs drawn from wired foundation, 10 zinc excluders, 11 Miller feeders, excellent condition. Best offer above $60.00 takes the lot. O. Postpichal, 868 No. 25th St., Philadelphia, Pa.

FOR SALE—Village property on state road near Albany, N. Y., 6 acres, 2 fruited, 300 colonies of bees in ten-frame standard hives. Everything modern. Large honey house, concrete bee cellar (see Gleanings, September number). One of the finest yards and outfits in New York State. Two crops of clover and buckwheat. Auto truck, tractor, power extractor. Everything goes with few reserves. $3000 down, balance on B. & M. Woodward Apiaries, Clarksville, N. Y.

FOR SALE—200 colonies bees in standard 10-frame hives, metal covers, no disease, 700 supers, full depth with combs, 5 acres of irrigated land, all in annual and biennial sweet clover, except garden. Bees in fine shape. Garden all planted. Good house with full basement. Tanks and outfit complete. Crop goes with business. Cash price, $7500 for immediate sale. Gross receipt for 1921 were over $4500 from bees alone. This is the Home of the Famous Custer Battlefield Apiaries. S. F. Lawrence, Hardin, Mont.

WANTS AND EXCHANGE.

WANTED—Root Novice extractor, second-hand. A. W. Canney, No. Westchester, Conn.

ROYAL typewriter, $65.00. Will trade for honey, queens or offer. E. A. Harris, Albany, Ala.

WANTED—2-frame reversible extractor, 12 x 16 pockets, in good condition. Edw. Baur, Danbury, Conn.

FOR SALE OR TRADE—Oliver typewriter and auto knitter for Barnes saw, etc. Nic. Klein, Hudson, Iowa.

WANTED—Old combs and cappings for rendering on shares. Our steam equipment secures all the wax. Superior Honey Co., Ogden, Utah.

BEESWAX wanted. Old combs (dry) and cappings for rendering. Also wax accepted in trade. Top market prices offered. A. I. Root Co. of Iowa. Council Bluffs, Iowa.

OLD COMBS, cappings or slumgum wanted for rendering by steam press process. We pay cash for wax rendered, trade for supplies, or work it into foundation. W. T. Falconer Mfg. Co., Falconer, N. Y.

FOR SALE OR TRADE FOR SUPPLIES—25-lb. box supers, sell for best offer, 8-frame supplies. A number of hives and frame supers complete. One foundation mill will sell for $35.00, 6-in. rolls. Must sell at earliest date. No disease. Hickory Shade Apiary, Ottervile, Mo.

OLD COMBS WANTED—Our steam wax-presses will get every ounce of beeswax out of old combs, cappings or slumgum. Send for our terms and our 1922 catalog. We will buy your share of the wax for cash or will work it into foundation for you. Dadant & Sons, Hamilton, Ill.

SEEDS AND PLANTS.

"We will not guarantee the purity of any seed advertised nor any nursery stock, as nurserymen ordinarily will not do this themselves; but any seedman or nurseryman advertising in our columns will have given us excellent references in advance and our readers may consider this fact in their favor."—From Our Guarantee and Advertising Conditions.

HUBAM—Michigan-grown, pure seed scarified. 50c per lb., postpaid. Frank E. Davis, Muskegon Heights, Gen. Del., Mich.

SWEET CLOVER SEED—Biennial white, hulled and scarified, $10.00 per bushel of 60 lbs. Sacks included. O. H. Townsend, Otsego, R. D. No. 2, Mich.

HUBAM CLOVER SEED—Guaranteed purity, grown by ourselves; certificate of purity and germination furnished; 1 lb., $1.00; 5 lbs., $4.50; 25 lbs., $21.25. Delivered prices. Write The Foster Honey Company, Boulder, Colo.

BEES AND QUEENS.

SEE Thagard's ad elsewhere back to pre-war day prices.

FOR SALE—Italian queens, nuclei and packages. B. F. Kindig, E. Lansing, Mich.

HARDY Italian queens, $1.00 each. W. G. Lauver, Middletown, Pa.

FOR SALE—Full colonies Italian bees in Buckeye hives. Write, price moderate. A. C. E. Hamilton, 161 Archer Ave., Mt. Vernon, N. Y.

WHEN it's GOLDEN, it's PHELPS. C. W. Phelps & Son, Binghamton, N. Y.

$200 for one queen. See larger ad elsewhere. J. M. Cutts & Son, R. D. No. 1, Montgomery, Ala.

FOR SALE—Hardy Italian queens. Prices on request. The Brookside Apiaries, Bennington, Neb.

TRY ACHORD'S BEES and QUEENS. Price list by return mail. W. D. Achord, Fitzpatrick, Ala.

SPECIAL prices on queens and bees. See my ad page 416. Frank Bornhoffer, Mt. Washington, Ohio.

1500 NUCLEI for May and June. Simmons queens ready now. Fairmount Apiary, Livingston, N. Y.

FOR SALE—15 colonies of bees. No disease. Tim O'Donnell, Jr., 1147 S. Springfield Ave., Chicago, Ill.

BOOKING orders now for early queens and package bees. Write for prices. Sarasota Bee Co., Sarasota, Fla.

FOR SALE—10 Italian colonies, tested queens, 8-frame wired combs. No disease. J. Ford Sempers, Aikin, Maryland.

WHEN it's quality, service and satisfaction you want to try Pinard. A. J. Pinard, 440 N. 6th St., San Jose, Calif.

FOR SALE—Golden Italian queens. Tested queens, $2.50; untested, $1.25. J. F. Michael, Winchester, R. D. No. 1, Ind.

FOR SALE—Carload bees, nuclei, pound packages, full colonies. See our ad elsewhere. The Stover Apiaries, Mayhew, Miss.

PHELPS GOLDEN QUEENS will please you. Mated, $2.00; 6, $10.00; or $18.00 a doz. C. W. Phelps & Son, Binghamton, N. Y.

PRITCHARD QUEENS are the result of years of careful breeding and selection. See ad page 414. Arlie Pritchard, Medina, Ohio.

QUEENS—One untested queen, $1.50; 6, $7.50; 12, $14.00; 50, $55.00; 100, $100. Tested queens, $2.50. Wells D. Rose, Sunnyside, Wash.

BUSINESS-FIRST queens offer you their illuminated descriptive handbook with prices, select untested, $1.50. M. F. Perry, Bradentown, Fla.

FOR SALE—Bright Italian queens, 1, $1.00; 12, $10.00; 100, $75.00. Safe arrival guaranteed. T. J. Talley, Greenville, R. D. No. 3, Ala.

FOR SALE—Three-banded Italian queens. Tested, after June 15, $2.00 each. J. D. Kroha, 87 North St., Danbury, Conn.

TWO-POUND package bees with untested Italian queen, $5.00; 3 lbs., $7.00. Safe delivery guaranteed. C. H. Cobb, Belleville, Ark.

PACKAGE BEES—$1.50 per pound. Untested Italian or Carniolan queens, $1.25 each. Circular free. J. E. Wing, 155 Schiele Ave., San Jose, Calif.

FOR SALE—Golden Italian queens, untested, $1.15 each; 6 for $6.50; 12 or more, $1.00. Safe arrival guaranteed. Sam Hinshaw, Randleman, N. Car.

"SHE-SUITS-ME" queens, line-bred Italians, $1.50 each; 10 to 24, $1.30 each. See back cover of January number. Allen Latham, Norwichtown, Conn.

TRY our northern-bred leather-colored Italian queens for European foul brood at $1.25 each; 6, $7.00; 12, $13.50. Charles Stewart, Johnstown, N. Y.

XUM

FOR SALE—Early package bees, nuclei and queens. We handle 1800 colonies. Shipping season March 1 to June 1. Loveitt Honey Co., Phoenix, Ariz.

STRONG four-frame nuclei of hybrid bees in June, $4.00. Four frames, Italians, or hybrids with untested queen, $5.00. B. F. Averill, Howardsville, Va.

MERRILL'S bright three-banded Italian queens will please you. Mated and laying, $1.00; 6, $5.25 or $10.00 a dozen. G. H. Merrill, R. D. No. 5, Greenville, S. Car.

FOR SALE—My Italian queens, now ready. Untested in June, each, $1.50; 6, $7.50. Safe arrival and satisfaction guaranteed. Circular. J. B. Hollopeter, Rockton, Pa.

ELTON WARNER'S QUALITY QUEENS—Progeny of his famous Porto Rican breeding stock. Write for illustrated price list. Elton Warner Apiaries, Asheville, N. C.

QUEENS—For summer and fall. Write for prices and guarantee, state quantity desired and when shipment wanted. I can fill your orders. J. L. St. Romain, Hamburg, La.

WE ARE booking orders now for spring delivery for the famous "Colorado Queens." Send your order early so as to be sure to get your queens. C. I. Goodrich, **Wheatridge, Colo.**

TRY my Caucasian or Italian 3-frame nuclei at $6.00 each with tested queen. Tested queens, $1.50; untested, $1.25, of either kind. No disease. Peter Schaffhouser, Havelock, N. Car.

FOR SALE—Three-band Italian queens, select untested, $1.00 each; $9.00 per doz. 2-lb. package with queen, $5.00. Satisfaction guaranteed. W. T. Perdue & Sons, Fort Deposit, Ala.

BEES BY THE POUND — Also QUEENS. Booking orders now. FREE circulars, giving details. See larger ad elsewhere. Nueces County Apiaries, Calallen, Texas. E. B. Ault, Prop.

DEPENDABLE QUEENS—Golden or three-banded, after June 1: 1, $1.50; 6, $8.00; 12, $15. Safe arrival and satisfaction guaranteed. Send for circular. Ross B. Scott, La Grange, Ind.

FOR SALE—Golden Italian queens ready May 1. 1 queen $1.25; 6, $6.50; 12, $12.00; 100, $85.00. Virgins, 50c each. Write for prices of nuclei. W. W. Talley, Greenville, R. D. No. 4, Ala.

FOR SALE—My 1922 golden queens, the big yellow kind, none better. Satisfaction guaranteed. Price $1.00 each, or $10.00 per doz. After June 15, 90c each, or $9.00 per doz. E. F. Day, Honoraville, Ala.

HIGH-GRADE ITALIAN QUEENS a specialty. Order early. Prompt shipment. Laying, $1.50; tested, $2.50. Day-old, with introduction guaranteed in the U. S., 75c. James McKee, Riverside, Calif.

FOR SALE—Leather-colored Italian queens, tested, until June 1, $2.50, after, $2.00. Untested, $1.25; 12, $13.00. ROOT'S GOODS, ROOT'S PRICES. A. W. Yates, 15 Chapman St., Hartford, Conn.

GOLDEN QUEENS that produce large beautiful bees, solid yellow to tip, very gentle and prolific. Untested, $1.25 each; select tested, $3.00 each; breeders, tested, $5.00. Dr. White Bee Co., Sandia, Texas.

FOR SALE—Three-banded Italian queens. 1, $1.00; 6, $5.00; 12, $9.00; 100, $70.00, after **May 20.** We ship only the best. Safe arrival and satisfaction guaranteed. W. C. Smith & Co., Calhoun, Ala.

FOR SALE—Golden Italian queens, untested, $1.15 each; 6, $6.50; 12 or more, $1.00 each; select untested, $1.60; 6 or more, $1.50 each. Safe arrival. Hazel V. Bonkemeyer, R. D. No. 2, Randleman, N. C.

CAN furnish promptly, 2-frame nuclei with queen, $3.50; 3-frame nuclei with queen, $4.50; 4-frame nuclei with queen, $5.50. Rosedale Apiaries, J. B. Marshall and H. P. LeBlanc, Props., R. F. D. No. 2, Alexandria, La.

IF GOOD bright Italian queens are wanted by return mail, send your order to M. Bates, Greenville, Ala. Price, $1.00 each; $10.00 per dozen; $75 per 100. Pure mating, safe arrival and satisfaction guaranteed.

TWO-POUND PACKAGES with queens, $4.75 each; 10 or more, $4.50 each; 25 or more, $4.25 each; discounts on pound packages after May 25. No disease, safe arrival and satisfaction guaranteed. J. J. Scott, Crowville, La.

WILLOW-DELL Italian bees and queens at lower prices for June. None better. Best to winter. Untested queen, $1.00; 6 for $5.00. Nuclei with queen, 2-fr., $3.75; 3-fr., $5.00. Jumbo, $4.50 and $5.75. H. S. Ostrander, Mellenville, N. Y.

FOR SALE—Unsurpassed Italian queens, ready June 1. Untested, 1, $1.25; 6, $7.00; 12, $12.50; 50, $50.00; 100, $95.00. Tested, 1, $2.00; 6, $11.00. My queens are actually laying before they are sent out. J. D. Harrah, Freewater, Oregon.

COLORADO HEADQUARTERS for QUEENS—Northern-bred leather-colored three-band Italians. Safe arrival guaranteed. Booking orders now for June 1st delivery. Send for circular and price list. Loveland Honey & Mercantile Co., Loveland, Colo.

THREE pounds of bees, shipped on a Hoffman frame of brood and honey, with an untested Italian queen for $6.00. No disease, satisfaction and safe arrival guaranteed. 25% books your order for April and May shipments. E. J. Beridon, Jr., Mansura, La.

ORDERS booked now for spring delivery. 3-frame nucleus and queen, $6.50; select tested, $7.50; Dr. Miller's strain. No pound packages. Low express rates and quick transit north. 10% with order. S. G. Crocker, Jr., Roland Park, Baltimore, Md.

FOR SALE—DEPENDABLE GOLDEN ITALIAN QUEENS. Add beauty to your bee quality. Virgins, 60c; 5 for $2.50; untested, $1.00; 6 for $5.00; select untested, $1.50; 6 for $8.50; tested, $2.50; 5 for $10.00; selected, $3.00; breeders, $5.00. Safe arrival and quality guaranteed. S. H. Hailey, Pinson, Tenn.

FOR SALE—Golden Italian queens, untested, $1.15; 6, $6.50; 12 or more, $1.00 each; tested, $2.00 each; select tested, $3.00 each; after July 1, untested, $1.00; 6 for $5.40; 12 or more, 80c each; tested, $1.50 each; select tested, $2.50 each. No disease of any kind. Bees very gentle and good honey-gatherers. D. T. Gaster, Randleman, R. D. No. 2, N. C.

CALIFORNIA QUEENS—100% perfect, large vigorous Italians, guaranteed layers. They are making a hit as proven by repeated orders and letters of appreciation. Am building a name and reputation. Try at least one. You will surely want more then. Price reduced. Select untested, 1, $1.00; 6, $5.00; 25, 90c each. H. Peterman, R. F. D., Lathrop, Calif.

LAST fall I had selected and tested six queens. Will use them as breeders this season in my queen yard. Their surplus honey capacity is from 216 lbs. to 288 lbs. each. I guarantee that every queen bought of me in 1922 is to be the daughter of one of these queens. Bees are three-banded. Mated, in June, $1.25 each; 6, $7.00; 12, $13.50; 25 or more, $1.00 each. After July 1, $1.00 each straight. Julius Victor, Martinsville, N. Y.

FOR SALE—Pinard's quality of Root's strain of bees and queens. Virgins, 50c. Untested queens, $1.25 each. Larger lots write. Circular free. After July 1, 10% discount. A. J. Pinard, 440 N. 6th St., San Jose, Calif.

BRIGHT ITALIAN QUEENS, $1.00 each, 10% less in dozen lots. Pure mating, safe arrival and reasonable satisfaction guaranteed in U. S. and Canada. Write us for prices on package bees. We have them in season. Graydon Bros., Rt. 4, Greenville, Ala.

HEAD your colonies with Williams' Italian queens of quality and get more pleasure and profit from your bees. They produce bees that are gentle, hardy and hustling. Descriptive circular free. Select untested, 75c each. P. M. Williams, Ft. Deposit, Ala.

MY GOLDEN ITALIAN QUEENS possess the qualities which make beekeeping profitable. Mated, $1.00 each, $10.00 per doz. Virgins, 50c each or $4.25 per doz. Safe arrival and satisfaction guaranteed. Your orders solicited. Crenshaw County Apiary (Melvin Talley, Prop.), Rutledge, Ala.

FOR SALE—Italian queens. Prices for untested in June, $1.50 each; 6, $8.25; 12, $16.00; tested, $2.50 each. From July 1 to Oct. 1, untested, $1.25 each; 6, $7.00; 12, $13.50; tested, $2.00 each. Safe arrival and satisfaction guaranteed. Ready to ship June 1 to June 10. R. B. Grout, Jamaica, Vt.

THE ITALIAN QUEENS OF WINDMERE are superior three-banded stock. Our aim is not quantity but quality. Our first consideration is to give perfect satisfaction. Untested, $1.50 each; 6 for $8.00; tested, $2.00 each; select tested, $3.00 each. Prof. W. A. Matheny, Ohio University, Athens, Ohio.

FOR SALE—Golden Italian queens and bees, untested. 1 queen, $1.00; 1 dozen, $10.00; 100, $75.00. 2-lb. package with queen, $5.00; 1-lb. package with queen, $3.00; 12 or more, 5% off. 2-frame nucleus with queen, $5.00; 15 or more, 5% off. Safe arrival and satisfaction guaranteed. J. F. Rogers, Greenville, R. D. No. 3, Ala.

ITALIAN QUEENS—Three-banded, select untested, guaranteed. Queen and drone mothers are chosen from colonies noted for honey production, hardiness, prolificness, gentleness and perfect markings. Price, May and June: $1.50 each, 12 or more, $1.25 each. Send for circular. J. H. Haughey Co., Berrien Springs, Mich.

PHELPS' GOLDEN ITALIAN QUEENS combine the qualtiies you want. They are GREAT HONEY-GATHERERS. BEAUTIFUL and GENTLE. Virgins, $1.00; mated, $2.00; 6 for $10.00 or $18.00 per doz.; tested, $5.00. Breeders, $10.00 to $20. Safe arrival guaranteed only in the U. S and Canada. C. W. Phelps & Son, Binghamton, N. Y.

I EXPECT to be ready to start shipping 3-lb. packages of bees with 1 frame, 1 untested queen at $6.00; 2-frame nuclei with untested queen, $4.50, about April 15. Young tested queen, 50c extra, or $1.50 each. I think I was the second to ship packages of bees from this state and know how to serve customers. F. M. Morgan, Hamburg, La.

FOR MAY DELIVERY—One vigorous Italian queen, one frame emerging brood, one pound bees, price complete, $5.00. Additional pound bees, $1.00. Additional frame of brood, $1.00. Banat mixed queens and bees 5% discount. After May 25 10% discount on all. Safe arrival guaranteed. Send 10% to book order. T. W. Livingston, Norman Park, Ga.

BEES—Engage your queens from any reliable dealer, and we will furnish you the bees. One-lb. pkg., $1.35 each; 2-lb. pkg., $2.50 each; 3-lb. pkg., $3.00 each. No orders accepted for less than 5 lbs. 10% will book your order. Bees will move exact date ordered. 1500 colonies to draw from. Our apiaries are favorably located for early breeding, hence all orders filled with young, vigorous bees. Never had a case of disease in our apiaries. We are experienced shippers. We give a full guarantee safe arrival and satisfaction. Brazos Valley Apiaries, H. E. Graham, Prop., Gause, Texas.

BALANCE of season we will furnish a 2-lb. package of our three-banded hustlers with a select untested queen for $4.75; 25 or more, $4.50 each. Select untested queens from our best breeders, $1.00 each; $10.00 per doz. Tested, $1.50 each; $15.00 per doz. Caney Valley Apiaries, J. D. Yancey, Mgr., Bay City, Texas.

FOR SALE—200 colonies of the celebrated Moore strain of leather-colored Italians. They are in Langstroth hives, combs all built on wired foundation. All have tested queens less than one year old. No disease among or near them. Price in lots of one to 50, $12.00 each; 50 to 100, $11.50 each; 100 or more, $11.00 per colony. Elmer Hutchinson & Son, Salt Lake City, Mich.

FOR SALE—250 colonies of bees, all in 10-frame hives, practically all new equipment, a splendid orange and sage location with an eight-room house, modern, plenty of land and in one of the best sections of Southern California. Will sell everything, property furnished ready to move into. Can give possession at once. Honey flow should last until middle of August. Address C. A. Wurth, R. D. No. 1, Box 167, Riverside, Calif.

CONNECTICUT queens. Highest grade 3-banded Italians ready June 1. Select untested $1.25 each; 6, $6.50; 12, $12.00; 50, $47.50; 100, $90. Two lbs. bees with queen, $5.00; 3 lbs. with queen, $7.00. Two-frame nuclei with queen, $5.50; 3-frame with queen, $7.50. Select virgin queens (not culls), 50c each, $45.00 per 100. No disease and satisfaction guaranteed. A. E. Crandall, Berlin, Conn.

MAY delivery, one, two and three pound packages, $3.00, $4.00 and $5.00. Nuclei, $3.00, $4.25 and $5.50, with select untested Italian queens. Special orders solicited. Select untested three-band queens, April and May, $1.25, 6 or more, $1.00 each. 20% books order. State health certificate. Safe arrival and satisfaction guaranteed. Address Apalachicola, Fla., office. Tupelo Honey Co., Columbia, Ala.

LARGE, HARDY, PROLIFIC QUEENS—Three-band Italians and Goldens. Pure mating and safe arrival guaranteed. We ship only queens that are top notchers in size, prolificness and color. After June 1 prices as follows: Untested, $1.25 each; 6 for $7.00; select untested, $1.50 each; 6 for $8.50; select tested, $3.00 each. Special prices on larger quantities. Queens clipped free on request. Health certificate with each shipment. Buckeye Queens, Zoarville, Ohio.

FOR SALE—50 colonies of bees in 2-story, 10-frame, metal-top hives, wired foundation. No disease. Strong colonies of goldens and three-banders with young queens. With above equipment is included 75 comb-honey supers, 2000 sections, 25 lbs. foundation, 50 bee-escapes and other equipment. Blue vine location furnished free if desired. $400 takes all above for quick sale. S. H. Burton, Washington, Ind.

I'M offering 100 two-frame nuclei for June delivery, with young untested three-banded Italian queens, for $375.00. Each package contains one and one-half pounds of bees, with fine frames drawn from full sheets foundation. 1 to 10 nuclei, $3.90 each; 10 or more, $3.85 each. Can ship from receipt of orders. Guarantee safe delivery and health certificate. C. A. Mayeux, Hamburg, La.

I HAVE nuclei and more nuclei for June delivery. 1000 2 and 3 frame nuclei with selected untested three-banded queens. These nuclei will go with a large force of young bees and extra fine frames drawn from full sheets of foundation. Note our prices on 10 or more: 1 nucleus with queen, 2-frame, $4.00; 10 nuclei, with queens, 2-frame,

$35.00; 1 nucleus, with queen, 3-frame, $4.75; 10 nuclei, with queen, 3-frame, $41.25. We guarantee to ship on receipt of order with health certificate and safe delivery. GUARANTEE. The Home of Good Queens, Oscar Mayeux, Hamburg, La.

QUEENS AND NUCLEI FOR SALE—Three-banded Italians, one queen, $1.10; per dozen, $10.00; 2-fr. nucleus with queen, $4.50; 3-fr. nucleus and queen, $6.00. Will book orders for two months for August and September delivery if wanted at a cut price of 50c on nucleus and 10c on queens. No disease. Orders filled at once. 50 swarms for sale delivered in September and October, at $10.00 each. Thanks in advance. Hickory Shade Apiary, Otterville, Mo.

FOR SALE—Three-banded queens and bees. Dr. Miller and my own stock. Three-frame nuclei and queen, $5.50; 1 lb. bees and queen, $2.75; 2 lbs. and queen, $5.00; 3 lbs. and queen, $6.25. All good empties returned at my charges. Queens, $1.25 each; 6 for $7.00; 12 for $13. 24 and over at $1.00 each. Reared in the Hubam black belt sweet clover section, Scotts Sta., Ala., by Curd Walker, queen-breeder.

I. F. MILLER'S STRAIN ITALIAN QUEEN BEES—Northern-bred for business; from my best SELECT BREEDERS; gentle, roll honey in, hardy, winter well, not inclindeo to swarm, three-banded. 28 years breeding experience. Satisfaction guaranteed. Safe arrival in U. S. and Canada. 1 untested, $1.50; 6, $8.00; 12, $14.00; 1 select untested, $1.75; 6, $9.00; 12, $17.00. 1 lb. bees, $3.00; 2 lbs., $5.00; 3 lbs., $7.00. I. F. Miller, Brookville, Pa., 183 Valley.

FOR SALE—Two-frame nuclei Italian bees, with tested Italian queen, delivery May 1 by express f. o. b. here, $7.50 each. Terms, $2.00 down, balance ten days before shipping date. These queens were reared last August from very choice Italian stock, and big producers. Order early as we have set a limit on number of nuclei we will sell this season. First come, first served. Largest apiary in Westchester County, Spahn Bros., Pleasantville, Westchester Co., N. Y.

FOR SALE—250 to 350 colonies of fine Italian bees, on good straight L. combs, with a full equipment of supplies for extracted-honey production. Also 47 acres land in Harrison County, Iowa, near town; has about 20 acres fine natural basswood grove. Has good improvements, especially for beekeeping. Probably as good an equipment as there is in the state. This is a good paying business, with outyards already established, everything complete. Can give long time on part of the price, but would require $8000 or $9000 to swing it. Any one having that much capital to invest in a dandy country home and a paying business, will find it by addressing E. S. Miles & Son, Dunlap, Iowa.

GOOD queens advertise themselves. It takes expensive advertising to sell poor queens, and if you don't believe it try it. We believed in former years we had the best three-banded queens obtainable. We still believe it. Our customers also tell us the same. Try a few. We have dropped the price in reach of all this year. We will have a few virgins for 50c when we have a surplus of them. We can furnish either from imported or Americanized mothers. Untested, $1.00; selected, $1.25; tested, $2.00; selected, $2.50. F. M. Russell, Roxbury, Ohio.

QUEENS AND PACKAGE BEES—Bright, three-banded Italian. We are now booking orders for the season of 1922. Shipments of queens and package bees this year commenced on March 15. All queens are mated in standard full-sized nuclei. We operate four thousand standard full-sized nuclei. Capacity and output of queen yards this season five thousand queens per month. We own, operate and run for extracted honey in the states of California and Nevada twelve thousand colonies of bees. All of our breeders are selected queens whose colonies led these twelve thousand colonies of bees last season. Better selection of breeders cannot be equaled or had anywhere. We have the capacity and output of queens and package bees to make shipments promptly as and when promised. We guarantee safe arrival of queens and package bees. Prices—Mated, untested queens: 1, $1.00; 6, $5.50; 12, $9.60; 13 to 99, 75c each; 100 or more, 70c each. Package Bees—Write for special price. Terms, 10 per cent deposit on booking order; balance at time of shipment. See our large advertisement in this magazine. Western Bee Farms Corporation (Principal); Western Honey Corporation and Western Citrus Honey Corporation (Associated Corporations), Claus Spreckels Building, No. 703 Market Street, San Francisco, California.

SPICER'S three-band Italian queens will be ready to mail about May 20. If you are interested in improving your stock and getting larger returns from your bees, head your colonies with these queens. Untested, $1.25; 6, $7.00; 12, $13.50. Tested, $2.50 each. Robt. B. Spicer, Wharton, N. J.

MISCELLANEOUS.

FOR SALE—Soy beans and whipporwill pease, $2.00 per bushel. W. L. Lyons, Decherd, Tenn.

WANTED—Good reversible extractor, exchange fine 25-20 Winchester Repeater, or will buy. Fred Fisher, 3 Elmendorf St., Albany, N. Y.

FOR SALE—Used honey cans in cases, good condition. S. T. Fish & Co., 163 W. S. Water St., Chicago, Ill.

TYPEWRITERS—All makes slightly used; $20 up. Easy payments. Free trial. Express prepaid. Guaranteed two years. Payne Company, Rosedale, Kansas.

FOR SALE—Fine coon dog "pups," 3 months old. Price, $10.00 to $15.00 each, f. o. b. express. Address, Old Coon Hunter O. H. Townsend, Otsego, R. D. No. 2, Mich.

MEDICINAL roots and herbs are very profitable to grow. We especially recommend growing Golden Seal, which with good care will yield as high as $10,000 per acre for each crop. It takes several years to mature but will average $1000 a year. Special Crops, a monthly paper, tells how. Sample copy, 10c. $1.00 per year. Address Special Crops Pub. Co., Box "G," Skaneateles, N. Y.

HELP WANTED.

WANTED—Man with some experience to work in our apiaries. State age, experience and wages. Answer fully in first letter. The Rocky Mountain Bee Co., Box 1319, Billings, Mont.

Special Notices by A. I. Root

Hubam in Florida.

On page 253 of our issue for April I said, "We are going to sow it on our potato ground as fast as the potatoes are dug." By the way, years ago I made up my mind that I would stop telling what I was going to do, but would try to confine my remarks to what I had actually done. As fast as our potatoes were dug I put the ground in nice trim and began sowing Hubam. But we had a long and severe drouth, with almost no rain at all, and the ground became fearfully hot in the middle of almost every day. Scarcely a seed came up. Sometimes after a little shower a few seeds would start up; but the hot sun killed them. During comparatively cool weather in November, December and January there is no trouble about getting it to grow; and, by the way, when I left my Florida home on the 26th of April some of my Hubam was over 9 feet tall. It stood the drouth—that is, after the long tap root had got away down—quite well for a time; but eventually the drouth cut short the amount of both bloom and foliage.

BEES - QUEENS

FROM GEORGIA

JUNE PRICES THREE-BANDED ITALIANS

QUEENS—Untested, 90c. Tested, $1.25. BEES—1 pound, $1.50; 2 pounds, $3.00; 3 pounds, $4.50. NUCLEI—1-frame, $2.25; 2-frame, $3.00; 3-frame, $4.50. 10% discount on lots 10 or more. Your satisfaction guaranteed. Disease resisting, and from yards certified free from disease. Send us your list of supply needs.

MICHIGAN HONEY PRODUCERS EXCHANGE. INC.

5495 Grand River Avenue, Detroit, Mich.

3-BAND ITALIANS

Our queen-rearing department is under the supervision of H. D. Murry, well known to the trade as a breeder of GOOD QUEENS. Reared from stock that put up 250 pounds surplus honey. Prompt and satisfactory service.

Untested, $1.25; 6, $7.00; 12, $13.50; 25 or more, $1.00. Tested, $2.00.

MURRY & BROWN

MATHIS, TEXAS.

QUEENS

Nordan's Three-Banded Italian Queens and Bees (Three-Banded Only)

BEEKEEPERS: If you have one colony or five thousand I want you to give my superior strain of three-banded Italians a trial. I am fixing the price right so you can. I am not a new man come out; I have been in business almost all of my life for honey production and improving my strain. I have selected and bred my strain from the finest mothers in my yards which were selected for all of the good qualities. For over a quarter of a century I spared neither labor nor money in developing my strain until now I can put queens and bees on the market which I know are surpassed by none and I guarantee that money cannot buy any better in the U. S. A. When you introduce my queens, beekeepers, you can feel assured you have a bee that cannot be surpassed by any in U. S. A., which is backed by over a quarter of century improving and selecting from the finest mothers and mated to drones that are selected.

NOTICE—My strain are guaranteed immune to Bee Paralysis. I have found the foundation of Bee Paralysis, which is in the queens, and now after years of selecting and testing I guarantee my strain resistant to it. Bee Paralysis is prevalent over the South. I will gladly replace any bees I ship that Bee Paralysis breaks out in.

QUALITY AND SATISFACTION.—Each and every queen I send out, if it be one or five thousand, is guaranteed to give absolute satisfaction; otherwise advise me and I will gladly send more to take their places. You don't run any risk. A record of over a quarter of a century of fair and honest dealings. You get your money's worth as nearly as possible plus a very small profit, and my price is fixed to a very small profit.

All queens select; if they do not prove up pleasing to the eye, they are not shipped. I do not price a select untested and ship an untested. I give the greatest care possible to produce the finest queens possible.

PRICES ON QUEENS AND PACKAGES.

	1	6	12	100
Select Untested	$0.85	$4.80	$9.00	$64.00
Tested	1.00	5.70	10.80	85.00

Packages Full Weight.

1-pound package with queen.....1 to 12, $2.35 each; 12 or more, $2.30
2-pound package with queen.....1 to 12, $3.85 each; 12 or more, $3.80

I can make shipment when you want them of either queens or packages.
I appreciate your business large or small.
Reference: Alabama Bank and Trust Co., Montgomery, Alabama.

M. S. NORDAN - MATHEWS, ALABAMA

BANKING BY MAIL AT 4%

A. T. Spitzer PRES.
E. R. Root VICE PRES.
E. B. Spitzer CASHIER

WRITE US FOR INFORMATION

about our safe, convenient method of Banking by mail.

A great many out-of-town people are finding constant satisfaction in banking with us by mail.

It won't obligate you in any way to get full details.

The SAVINGS DEPOSIT BANK CO.

THE HOME OF THE HONEY-BEE MEDINA, OHIO

A-T-T-E-N-T-I-O-N!

OHIO AND WEST VIRGINIA BEEKEEPERS.

We are most favorably located for serving Central, Southern and Eastern Ohio, and also West Virginia. No matter where you are, full stocks, best shipping facilities and prompt attention will insure satisfaction. Free catalog.

MOORE & PEIRCE
Zanesville, Ohio—"Beedom's Capital."

Michigan Bred Three-Band Italian Queens, Untested.

July Delivery.

1 to 9, $1.40 ea.; 10 to 100, $1.30 ea.

August Delivery.

1 to 9, $1.25 ea.; 10 to 100, $1.15 ea.
Select Tested after June 20, $2.00 ea.
Virgins after June 1st, 1 to 9, 60c ea.; 10 up, 55c ea.

If you must have untested during June send elsewhere, as old customers have ordered my June outfit of untested.

D. A. DAVIS, Birmingham, Michigan.

PATENTS---TRADEMARKS

I offer prompt, personal and expert professional service. 10 years' experience. Write for terms.
LESTER SARGENT, Patent Attorney, 524 Tenth St., N. W., Washington, D. C.

World's Best Roofing
at Factory Prices
"Reo" Cluster Metal Shingles, V-Crimp, Corrugated, Standing Seam, Painted or Galvanized Roofing, Sidings, Wallboard, Paints, etc., direct to you at Rock-Bottom Factory Prices. Save money—get better quality and lasting satisfaction.
Edwards "Reo" Metal Shingles
have great durability—many customers report 15 and 20 years' service. Guaranteed fire and lightning proof.
Free Roofing Book
Get our wonderfully low prices and free samples. We sell direct to you and save you all in-between dealer's profits. Ask for Book No. 183
LOW PRICED GARAGES
Lowest prices on Ready-Made Fire-Proof Steel Garages. Set up any place. Send postal for Garage Book, showing styles.
THE EDWARDS MFG. CO.
633-683 Pike St. Cincinnati, O.
FREE
Samples & Roofing Book

MAY QUEENS PRICED RIGHT

UNTESTED, $1.20 EACH. 12 OR MORE, $1.00.
SELECTED UNTESTED, $1.50. TESTED, $2.00.
Satisfaction guaranteed. No Disease.

D. W. HOWELL
SHELLMAN, GEORGIA. BOX A3.

BEES—ITALIAN BEES—BEES

Full colonies with Italian queen at $15; 2 for $25. 3-frame nucleus with Italian queen at $6.50. 3-lb. package with Italian queen at $6.50. No disease. Safe arrival and satisfaction guaranteed.

VAN'S HONEY FARMS
Van Wyngarden Bros., Props. Hebron, Indiana.

QUEENS -- QUEENS

LARGE, leather-colored 3-banded Italian queens; 10-years selection, bred for honey-gathering; gentle, hardy and long-lived. Price: Select untested, 1, $1.25; 6, $6.50; 12, $12. After July 1: 1, $1; 6, $5; tested, $1.50 each. Write for price on large orders. Free booklet, "How to Transfer, Get Honey and Increase."

J. M. GINGERICH, KALONA, IOWA.

INDIANOLA APIARY offers Italian Bees and Queens for following prices: Untested Queens, $1.00 each; Tested Queens, $1.50 each. Bees, per lb., $2.00. Nucleus, $2.00 per frame. No disease. Bees inspected.

J. W. SHERMAN,
Valdosta, Georgia.

ROOT QUALITY BEES AND BEEKEEPERS' SUPPLIES.

Bees in the hive, in packages, and nuclei, three-banded leather-colored Italian queens. Let a beekeeper of long standing serve you in your requirements for 1922. Catalog on request.

O. G. RAWSON,
3208 Forest Place, East St. Louis, Illinois.

Goldens the Best

14 years in business should give you best queens possible. Untested, $1, or 6 for $5; in lots of 25 or more, 75c each. Virgins, 40c each, or 3 for $1. Satisfaction and promptness my motto.

R. O. COX, Box 25, RUTLEDGE, ALABAMA.

"Marugg's Special"

IMPORTED MOWING BLADES

And Sickles with DANGEL cutting edge "THE MARUGG SPECIAL" are praised by thousands of users in the United States. Used by leading apiarists. Write for particulars to THE MARUGG COMPANY, Dept. B, TRACY CITY, TENN.

Queens of Quality

From Tennessee

3-BAND ITALIANS ONLY.

Untested, $1.00 each; six for $5.00. $9.00 per dozen. Now shipping by return mail. Circular free.

J. I. BANKS, Dowelltown, Tenn.

NEWMAN'S QUEENS

Originated from the world-famous Moore strain of Italians. Absolutely first quality and fully guaranteed, no disease. Satisfaction and safe arrival.

Untested: 1, $1.25; 6, $6.00; 12, $11.00.
Sel. Unt.: 1, $1.75; 6, $8.00; 12, $15.00.

Circular free.

A. H. NEWMAN, Queen-Breeder. Morgan, Kentucky.

THREE BANDED

ITALIAN QUEENS

Reared from the best breeders obtainable in strong ten-frame colonies. Mated in four-frame nuclei. Delivery after April 10th at the following prices:

Untested—1, $1.00; 5, $4.50; 10 to 50, 80c. Large lots, 75c each.
Tested—1, $2.00; 10, $17.
PACKAGE BEES WITH QUEENS.
1-lb. package, $3.50; 10 or more, $3.25 ea.
2-lb. package, $5.25; 10 or more, $5.00 ea.

Situated to promptly supply Western and Northwestern beekeepers. Safe arrival and satisfaction guaranteed.

THE ORANGE APIARIES, Porterville, Calif.
O. F. Darnell, Prop. M. S. Fortune, Breeder.

—QUEENS OF—

MOORE'S STRAIN

OF ITALIANS PRODUCE WORKERS
That fill the supers quick
With honey nice and thick.

They have won a world-wide reputation for honey-gathering, hardiness, gentleness, etc. Untested queens $1.50; 6, $8; 12, $15.00. Select untested, $2; 6, $10.00; 12, $19.00. Safe arrival and satisfaction guaranteed. Circular free.

J. P. MOORE, Queen Breeder, Route 1, Morgan, Kentucky.

NEW ENGLAND

Beekeepers will find a complete line of the best supplies here. Send in your order early and be ready for the harvest. Remember this is the shipping center of New England. Write for new catalog.

H. H. JEPSON

182 Friend Street. BOSTON 14, MASS.

"Best" Hand Lantern

A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable—Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. **Agents wanted. Big Profits. Write for Catalog.**

THE BEST LIGHT CO.
306 E. 5th St., Canton, O.

PATENTS

Practice in Patent Office and Court. Pat. Counsel of The A. I. Root Co.

CHAS. J. WILLIAMSON,
McLachlan Bldg., Washington, D. C.

Free Crochet Needle

FREE CROCHET NEEDLE. Just imported from England; has unique handle; can't slip. Yours free for a wonderful Filet and Venetian Crochet Book—80 new, exclusive designs with directions. Only 25c a copy—edition limited, only one copy to a family. **The Boyd Import & Mfg. Co., Dept. J, Perry-Payne Bldg., Cleveland, O.**

Cheapest Way to Go

to work or school and recreation is on a **Ranger** bicycle. Choice of **44 styles** and sizes. *30 Days' Free Trial.* Express prepaid.

12 Months to Pay if desired. Saved time and carfare easily meets the small payments.

Tires Parts, equipment—at half usual prices. *Send no money.* Write for our remarkable factory prices and marvelous terms.

Mead Cycle Company Dept. L Chicago Write us today for free catalog

MASON BEE SUPPLY COMPANY
MECHANIC FALLS, MAINE

From 1897 to 1922 the Northeastern Branch of The A. I. Root Company

PROMPT AND EFFICIENT SERVICE

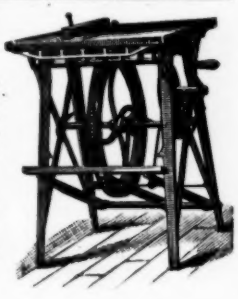
BECAUSE—Only Root's Goods are sold.
It is a business with us—not a side line.
Eight mails daily—Two lines of railway.
If you have not received 1922 catalog send name at once.

BARNES' HAND & FOOT POWER MACHINERY

This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, etc.

Machines on Trial

Send for illustrated catalog and prices.



W. F. & JOHN BARNES CO.
545 Ruby Street
ROCKFORD, ILLINOIS.

QUEENS

OUR OLD RELIABLE THREE-BANDED ITALIANS ARE HONEY GETTERS.

They are gentle, prolific, and very resistant to foul brood. Orders booked for one-fourth cash. Safe arrival guaranteed. Circular free.

PRICES

	1	6	12
Untested	$1.00	$5.50	$10.00
Select Untested	1.25	6.50	12.50
Tested	2.25	12.50	24.00
Select Tested	$3.00 each		

See our Dec. and Jan. Advertisement.

JOHN G. MILLER

723 C Street, Corpus Christi, Texas.

Let us tell you about the California Gold Medal Queens
The Queens with the Pedigree.

Our hardy, immune, prolific strain of 3-banded leather-colored Italians. Developed from the world's best strains by careful selection and tested under California conditions for five years, with excellent results. My specialty will be breeding stock and every queen produced will receive my personal care and inspection. Now receiving orders for the season of 1922, which will be filled in the order of their receipt. Write for catalog and prices.

THE COLEMAN APIARIES

GEO. A. COLEMAN, Prop.,
2649 Russell St., Berkeley, California.

Q-U-E-E-N-S

Select three-banded Italians that will please. Our bees are unexcelled for gentleness, disease-resisting qualities and honey production. Pure mating and satisfaction guaranteed.

	1	6	12
Untested	$1 25	$ 7.00	$13.00
Select Untested	1.50	8.00	14.00
Tested	2.50	13.00	25.00
Select Tested	3.00	16.00	30.00
Select Tested Breeders			$5.00
Day-old queens			40c each

Queens ready to ship by return mail. Queens' wings clipped free of charge. Write for descriptive circular and prices per hundred.

HARDIN S. FOSTER
COLUMBIA - - - - TENNESSEE

MOTT'S NORTHERN-BRED ITALIAN QUEENS

All are selected queens this season.

Select Untested, $1.50 each, $15.00 per doz. Sel. Guaranteed pure mated, or replace free, $1.75 each, $18.00 per doz. Sel. Tested, $2.50. Virgins (not mated), 75c each, $8.00 per doz. After June 1st, 10% off to the Canadian trade to help out on exchange.

Plans "How to Introduce Queens" and "Increase," 25c.

E. E. MOTT
GLENWOOD, MICHIGAN.

I Pay Transportation Charges on Package Bees

1-lb. pkg., including young 3-banded queen $4.50
2-lb. pkg., including young 3-banded queen 6.00
3-lb. pkg., including young 3-banded queen 7.50

25 cents per package less for twelve or more packages. Delivered to your address via parcel post. In comparing my prices with others, take in consideration you have no express charges to pay. Parcel post shipments go through quicker.

PRICES OF QUEENS AFTER MAY 15:

1 Select Untested.... $1.00
5 Select Untested.... 4.75
10 Select Untested.... 8.50
25 Select Untested, 75c each

Orders filled by return mail. Pure mating and satisfaction guaranteed. It is left with customer to say what is satisfaction. No disease.

JASPER KNIGHT, Hayneville, Ala.

QUIGLEY QUALITY

Italian Queens and Bees are produced by double grafting, producing queens of superior quality and long-lived bees, filling your big hives with bees. Hustlers, hardy, wintering on summer stands. No disease; 36 years in this location. Purity and satisfaction guaranteed.

Untested, June $1.50; 6, $7.50; 12, $14.00.
Tested, June, $3.00. Fine Breeders, $10.00.
3-frame Nuclei, tested queen, $7.50.

Send for circular.

E. F. QUIGLEY & SON
UNIONVILLE, MISSOURI.

Quality Bees

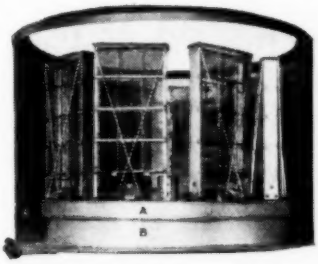
From the apiaries of E. R. King, formerly Deputy State Inspector of Apiaries in Ohio, later in charge of Apiculture at Cornell University.

	JUNE	JULY
Full colony in 1-story 10-fr. hive with tested queen	$14.50	$12.00
Two-frame nucleus with untested queen	5.50	4.00
2-lb. package of bees with untested queen	4.75	4.00
Untested Italian queen	1.25	1.00

First shipments can be made about May 15. 20 per cent payable with order, remainder at shipment. Price reductions for quantity orders.

KING'S APIARIES,
McARTHUR, OHIO.

Lewis Extractors



Lewis-Markle Power Honey Extractor. Tank cut away.

Made in 4 and 8 frame sizes. Accommodates 2 sizes of baskets, power operation, machinery underneath, no vibration, tank and baskets instantly removable for cleaning. A commercial success. Circular free. Address:

G. B. LEWIS COMPANY

Watertown, Wisconsin, U. S. A.

There's a Distributor Near You.

Established 1885.
Write us for catalog.

BEEKEEPERS' SUPPLIES

ALWAYS ON TOP

The Kind You Want and the Kind That Bees Need.

We have a good assortment in stock of bee supplies that are mostly needed in every apiary. The A. I. Root Co.'s brand. Let us hear from you. Information given to all inquiries. Beeswax wanted for supplies or cash.

John Nebel & Son Supply Co.
High Hill, Montgomery Co., Mo.

LEWIS 4-WAY BEE ESCAPES

Four exits from supers. Fits all standard boards. Springs of coppered steel. Made of substantial metal. Price each 18c prepaid. Made by

G. B. LEWIS COMPANY, Watertown, Wis., U. S. A.
For Sale by all Dealers.

HONEY

We are in excellent position to serve beekeepers who do not produce enough Honey to supply their trade. We have a big stock of fine table honey of various grades always on hand.
In 60-lb. Tins Crystallized—Water White Orange, 15c; White Sage, 14c; Extra L. A. Sage, 12c; Buckwheat, 10c.

GLASS AND TIN HONEY CONTAINERS.

2½-pound cans, 2 dozen reshipping cases.....$1.45 case; crates of 100, $4.50
5-lb. pails (with handles), 1 dozen reshipping cases....$1.35 case; crates of 100, $7.00
10-lb. pails (with handles), ½ dozen reshipping cases..$1.10 case; crates of 50, $5.25
60-lb. tins, 2 per case.....New, $1.20 case; used, 25c

White Flint Glass, With Gold Lacquered Wax Lined Caps.
8-oz. honey capacity..$1.50 per carton of 3 doz.
16-oz. honey capacity.$1.40 per carton of 2 doz.
Qt. 3-lb. honey capacity.$1 per carton of 1 doz.

HOFFMAN & HAUCK, Inc.
WOODHAVEN, NEW YORK.

CENTRALLY LOCATED TO SERVE NEW ENGLAND BEEKEEPERS.

Root QUALITY BEE SUPPLIES

ORDERS FILLED PROMPTLY.

CATALOG ON REQUEST.

F. COOMBS & SONS, BRATTLEBORO, VERMONT

QUEENS

Pure Three-Band Italians Only.
Select Breeding.

Best methods and equipment as approved by up-to-date authorities. You can get none better at any price. Our free folder will tell you what others say about them. A trial order will convince you that they have the qualities desired.

PRICES AND TERMS.

Untested, 1 to 12, $1.10 each; 13 to 25, $1.00 each; 26 to 100, 90c each. Select untested, add 25c per queen. Tested, $1.75. Select Tested, $2.00. Breeders, $7.50 and $10.00 each on a one-frame nucleus.

For delivery after June 1st, deduct 10% from above. Send 20% to book, and balance before shipment is wanted. Pure mating, safe arrival and complete satisfaction guaranteed. No more package bees or nuclei this season.

JENSEN'S APIARIES

R. F. D. No. 3, CRAWFORD, MISS.

That Pritchard Queens
AND
Pritchard Service

made a hit last season is proven by the many letters of appreciation and repeated orders received. This year we are BETTER PREPARED WITH a LARGER OUTFIT AND REDUCED PRICE.

THREE-BANDED ITALIANS.

Untested .....$1.25 each; 6 for $7.00
Select Untested.$1.50 each; 6 for $8.50
Select Tested .....each $3.00

Queens clipped free on request. We are booking orders now. Send yours at once and we will do our best to ship on date you desire. Acknowledgment and directions for introducing sent on receipt of order. Safe arrival and satisfaction guaranteed. Untested ready about June 1.

ARLIE PRITCHARD

R. F. D. No. 3. MEDINA, OHIO

FOR SALE
PACKAGE BEES

All bees are shipped on a standard Root frame, emerging bees with honey.

June 1st to 15th.

2-pound package $2.75
3-pound package 3.50
4-pound package 4.25

and untested queen with each package bees.

Safe delivery guaranteed. Free from any contagious bee disease. Certificate will accompany each shipment.

A. J. LEMOINE

MOREAUVILLE, LA.

Strong Nuclei
FOR
Little Money

Prepaid to your Town or Station Any Month of the Year.

From stock originally bred by Henry Alley and E. L. Pratt more prominently known to the beekeepers of 15 years ago as SWARTHMORE.

This stock was bred and selected for upwards of 20 years by the above well-known breeders. Since 1909 I have continued this work of selection. Have 600 colonies to draw from.

1-fr. nuclei with untested queen. $6.00
2-fr. nuclei with untested queen. 6.75
3-fr. nuclei with untested queen. 7.25

DELIVERED FREE in 1st, 2nd, 3rd, 4th and 5th parcel post zone from N. Y. City. Additional charge of 10% beyond that zone.

GUARANTEED SAFE DELIVERY.
NO FOUL BROOD IN PORTO RICO.

TROPICAL APIARIES, Aibonito, Porto Rico

PENN G. SNYDER.

We Are the HUB for

HUBAM

Guaranteed, certified, Annual Sweet Clover.

All new crop, grown on our own farms and all from the first fifty seeds from that original plant at Ames.

We are shipping to all parts of the world now. HUBAM is being planted somewhere every day for bee pasture, hay, pasture, or for green manure to plow in.

The seed is hulled and scarified, with a purity of 99.8% and grows 97%. Price now is $2.00 per pound.

With each and every order for Hubam we will include FREE a can of Nitragin pure culture bacteria which will insure proper growth of the Hubam plant.

Our seed is pure. You buy from an old established firm with a reputation to maintain when you buy from

THE HENRY FIELD SEED COMPANY
SHENANDOAH, IOWA.

Bee Supplies

Send us your orders for honey containers NOW.

Special Prices on

TIN AND GLASS HONEY CONTAINERS

2½	-lb. Cans, per 100	$4.25
5	-lb. Pails, per 100	7.00
10	-lb. Pails, per 100	10.50
60	-lb. Sq. Cans, per case of 2	1.25
2½	-lb. Cans, per case of 24	1.25
5	-lb. Pails, per case of 12	1.10
10	-lb. Pails, per case of 6	.90

GLASS JARS.

8-oz. honey capacity, case of 24	$1.15
16-oz. honey capacity, case of 24	1.35
32-oz. honey capacity, case of 12	1.20

Write for prices on large quantities, stating number and sizes wanted.

Send us a list of your requirements of BEE SUPPLIES, and we will quote you prices that are right.

A. H. RUSCH & SON CO.,
REEDSVILLE, WIS.

The "BEST" LIGHT

Positively the cheapest and strongest light on earth. Used in every country on the globe. Makes and burns its own gas. Casts no shadows. Clean and odorless. Absolutely safe. Over 200 styles. 100 to 2000 Candle Power. Fully Guaranteed. Write for catalog. AGENTS WANTED EVERYWHERE.

THE BEST LIGHT CO.
306 E. 5th St., Canton, O.

KITSELMAN FENCE

"I saved 20 cents a rod" writes Martin Wagner, St. Anthony, Ind. Think of it! **YOU, too, CAN SAVE.** Write today for our big 100-page Catalog showing **Lowest Prices** on Farm, Poultry, Lawn Fence, Posts, Gates. It's Free.

KITSELMAN BROS. Dept. 21 MUNCIE, IND.

DON'T DELAY---GET OUR PRICES

WE SAVE YOU MONEY

"Falcon"

SUPPLIES --- QUEENS --- FOUNDATION

W. T. FALCONER MFG. COMPANY

FALCONER (Near Jamestown) NEW YORK

"Where the best beehives come from."

Northern-bred Italian Queens Are Hardy Queens

We are in position to furnish you good, hardy, thrifty queens, the result of ten years' selective breeding, the best breeders from over seven hundred colonies. Each breeder has a honey record. Each year new stock has been secured, and so we have built up a strain of bees which, I believe, cannot be beaten in the Northwest. Orders will be handled promptly. On large orders secure mailing date. Fifteen per cent down, balance two weeks before shipment. Shipments begin June 1.

1	Untested Queen	$ 1.50
6	Untested Queens	7.50
12	Untested Queens	14.00
50	Untested Queens	55.00
100	Untested Queens	100.00
	Tested Queens, each	2.50

WELLS D. ROSE
SUNNYSIDE, WASHINGTON.

3-Banded Queens

If you have tried the rest Now try the BEST.

Our customers are amazed at the good queens we send them for the money. One customer from Iowa writes, "Queen I got from you last year stands at the head of the list and I have queens from nine different breeders in five different states." Another from Nebraska: "I certainly like the gentleness of your bees. Please book me for a dozen." One from Illinois: "The queens I got of you last year are certainly doing fine, etc." We rear our queens to get results and a trial order will convince you as it did hundreds of our other customers. We are able to furnish only a thousand of these A-No. 1 queens a month. Better not delay in placing your order.

Every queen guaranteed to be purely mated, to reach you in perfect condition and to give what you think is satisfaction. Never have had any contagious or infectious diseases in our apiaries.

Untested ...$1.25; 12, $13.50; 25, $1.00 ea.
Sel. Untest... 1.50; 12, 16.20; 25, 1.25 ea.
Sel. Tested.. 2.50; 12, 27.00; 25, 2.00 ea.

Circular and complete price list free.

HERMAN McCONNELL,
ROBINSON - - - ILLINOIS

High Quality Queens

By Return Mail

Untested Queens—1, $1.00; 6, $5.50; 12, $10.00; 25, $20.00. Select Untested —1, $1.20; 6, $6.50; 12, $12.00; 25, $23.50. Select Tested—$2.00 each.

NUCLEI AND PACKAGE BEES.

2-frame nucleus, $3.25; 3-frame nucleus, $4.50. 1-lb. package, $2.00; 2-lb. package, $3.25; 3-lb. package, $4.50. Add price of queen wanted with nucleus or package. Safe delivery and fullest satisfaction guaranteed. Health certificate furnished with each shipment.

FRANK BORNHOFFER
MT. WASHINGTON, OHIO.

Selected Queens

of the Highest Quality

1000 Full Colonies 1000 Nuclei
Queens by Return Mail

Three-banded Queens Our Specialty

Our queens produce bees that are wonderful honey gatherers, gentle and most resistant to all diseases. We guarantee every queen we ship to give entire satisfaction. Wings we clip free of charge on request. Safe arrival and prompt delivery are also fully guaranteed. There may be other queens just as good, but we believe you will find few better. To know them, try them.

Hayneville Apiary Co.
Hayneville, Alabama.

A SUPERIOR QUALITY AT LESS COST

Supplies

(MADE BY THE DIAMOND MATCH CO.)

A SUPERIOR QUALITY AT LESS COST

Reasons why our prices are reasonable: Our supplies are brought to us in cargo lots by steamer from California through the Panama Canal. The resulting saving in freight cost is passed on to our customers.

One-Story Complete Dovetailed Hive

With metal telescope cover, inner cover, reversible bottom, Hoffman frames, nails, rabbets.

Standard Size.

Crate of five, K. D., 8-frame.....$12.65
Crate of five, K. D., 10-frame..... 13.25

Jumbo Size.

Crate of five, K. D., 10-frame..... 14.25

Hive-Bodies

With Hoffman frames, nails, rabbets.

Standard size, crate of 5, K. D., 8-fr..$5.20
Standard size, crate of 5, K. D., 10-fr. 5.85
Jumbo size, crate of 5, K. D., 10-fr.. 6.85

Hoffman Frames

Standard size 100, $5.20; 500, $25.00
Shallow 100, 4.30; 500, 21.00
Jumbo 100, 5.80; 500, 28.00

Diamond Brand Foundation

Medium .....5 lbs., 68c lb.; 50 lbs., 65c lb.
Thin Super...5 lbs., 75c lb.; 50 lbs., 72c lb.

Aluminum Honeycombs

Standard Langstroth .....$5.00 box of 10
Shallow Extracting ..... 4.00 box of 10
Jumbo ..... 6.00 box of 10

HOFFMAN & HAUCK, INC.

WOODHAVEN, NEW YORK

Northwestern Headquarters for Italian Queens

The queen is the life of the colony. You cannot afford to keep poor queens or a poor strain of bees. I have been in the bee business for more than twenty years and have made every effort to improve the honey-gathering qualities of my bees by purchase of breeders and by selective breeding. I believe that my bees are unsurpassed by any. When you buy Untested Queens from me you are getting select untested queens. I will begin mailing queens about June 1.

Prices June 1 to October 1:	1	6	12	50	100
Untested Italian Queen.....	$1.25	$7.00	$12.50	$50.00	$95.00
Tested Italian Queen.....	2.00	11.00			

I have no pound packages or nuclei for sale.

J. D. HARRAH, Route 1, FREEWATER, OREGON

Queens *Bees*

Forehand's 3-Bands

One Queen for $1.00

They Satisfy. Why?

Because they are guaranteed to be as good as money can buy. Not a cheap queen but a queen of the best at a cheap price. Every queen guaranteed to reach destination in first-class condition, to be purely mated and give perfect satisfaction or money back. Orders filled by return mail.

Untested: 1 to 25, $1.00 each; 25 to 50, 90c; 50 to 100, 80c each. Select Untested, 1 to 25, $1.25 each. Tested, $2.00 each, or 12 for $20.00. One lb. pure Italian bees with queen, $3.00. Two lbs. pure Italian bees with queen, $5.50 Ten of more 2-lb. packages, $5.00 each.

N. FOREHAND, RAMER, ALABAMA.

QUEENS
Bright Three-Banded Italian.

QUEENS
Bright Three-Banded Italian.

Package Bees

We are now booking orders for queens and package bees for the season of 1922.

Shipments of queens and package bees this year commenced on March 15, 1922.

All queens are mated in standard full-sized three-frame nuclei.

We are operating four thousand standard full-sized three-frame nuclei.

Capacity and output of queen yards this season is five thousand queens per month.

We own, operate and run for extracted honey in the states of California and Nevada twelve thousand colonies of bees. All of our breeders are selected queens whose colonies led those twelve thousand colonies of bees last season. Better selection of breeders cannot be equaled or had anywhere.

We have the capacity and output of queens and package bees to make shipments promptly as and when promised.

All queens shipped by us in six-hole mailing cages. No small-sized mailing cages used.

We guarantee safe arrival of queens and package bees. Any queens or package bees arriving dead at destination will be replaced without charge.

References by permission: The A. I. Root Company of California, No. 52 Main Street, San Francisco, California, and No. 1824 E. Fifteenth Street, Los Angeles, California; The Diamond Match Company, Apiary Department, Chico, California; The Western Honey Bee, No. 121 Temple Street, Los Angeles, California; Bees and Honey, Hutchinson Building, Oakland, California; The Beekeepers' Review, Lansing, Michigan.

Banking references upon request.

We respectfully solicit your patronage.

Prices and Terms

MATED UNTESTED QUEENS

1	$1.00
6	5.50
12	9.60
13 to 99, each	.75
100 or more, ea.	.70

PACKAGE BEES.

Write for special Price.

TERMS.

10% deposit on booking order.
Balance at time of shipment.

WESTERN BEE FARMS CORPORATION
(PRINCIPAL)

Westen Honey Corporation :: Western Citrus Honey Corporation
(ASSOCIATED CORPORATIONS)

General Offices: Claus Spreckels Building, No. 703 Market Street, San Francisco, California.

The Quality of Root's Goods is such that their continuous use enables one to build up complete equipment for any number of colonies, every unit being interchangeable with every other unit, and each additional order increasing the value and usefulness of all.

We suggest that you anticipate your needs as far as possible during the very busy months of June and July. We are making every effort to give good service.

M. H. HUNT & SON

510 North Cedar Street, Lansing, Michigan